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OF
BOMBAY CITY and ISLAND.

Volume III.

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CONTENTS.

VOLUME III.

CHAPTER X—THE BOMBAY MUNICIPALITY, PORT TRUST, AND IMPROVEMENT TRUST.

	Page
THE BOMBAY MUNICIPALITY.—	
GENERAL ACCOUNT	1— 14
FINANCIAL HISTORY	14— 27
REVENUE AND EXPENDITURE	27— 30
ASSESSMENT AND COLLECTION OF PROPERTY	
TAXES	30— 31
WATER SUPPLY AND WORKS	32— 42
DRAINAGE	42— 47
LICENSE DEPARTMENT	47— 49
FIRE BRIGADE	49— 51
LIGHTING	51— 53
MARKETS	53— 62
PUBLIC GARDENS	62— 63
BURIAL GROUNDS	63— 66
THE BOMBAY PORT TRUST.—	
ADMINISTRATION OF PORT PRIOR TO 1873 .	66— 68
THE FORMATION OF THE PORT TRUST .	68— 73
REVENUE HISTORY OF THE BOARD .	73— 76
THE OPERATIONS OF THE PORT TRUST .	76— 79
THE STAFF	79— 80
ESTATES AND LEASES	80— 81
THE CITY IMPROVEMENT TRUST.—	
HISTORY	81— 82
CONSTITUTION AND STAFF	82
SPECIAL COLLECTOR'S COURT AND TRIBUNAL	
OF APPEAL	82— 83
THE WORK OF THE TRUST	83— 85
FINANCE	85— 87
TRUST'S ESTATES AND LEASES	87— 89
APPENDICES I TO VI	89— 98

	Page
CHAPTER XI--EDUCATION.	
EARLY ACCOUNT (1000-1840)	99-105
THE BOARD OF EDUCATION (1840-1855)	105-107
THE EDUCATIONAL DEPARTMENT (1855-1895)	107-112
" " (1865-1872)	112-115
" " (1872-1882)	115-117
" " (1882-1897)	117-119
" " (1897-1909)	119-125
THE BOMBAY UNIVERSITY	125-129
THE ELPHINSTONE COLLEGE	129-133
THE WILSON COLLEGE	133-134
ST. XAVIER'S COLLEGE	134-135
THE GRANT MEDICAL COLLEGE	136-138
LIBRARIES	138-139
JOURNALISM	140-144
PRINTING PRESSES	145-147
LEADING NEWSPAPERS	147-152
APPENDICES I TO III	153-160
CHAPTER XII--HEALTH.	
SANITARY CONDITION	161-170
DISEASES	170-177
BIRTHS AND DEATHS	177-180
INFIRMITIES	180
MEDICAL INSTITUTIONS	180-186
THE ST. GEORGE'S HOSPITAL	186-188
THE JAMSETJI JIJIBHOY HOSPITAL	188-189
THE SIR COWASJI JEHANGIR OPHTHALMIC HOSPITAL	189-190
THE BAI MOTLIBAI OBSTETRIC HOSPITAL	190-191
THE CAMA HOSPITAL	191-192
THE NORTHCOTE POLICE HOSPITAL	193
THE GOKULDAS TEJPAL HOSPITAL	193-194
THE COLOABA LUNATIC ASYLUM	194-196
THE ACWORTH LEPROSY ASYLUM	196-198
VACCINATION	198-202
APPENDICES I TO III	203-207

CHAPTER XIII—PLACES AND OBJECTS OF
INTEREST.

	Page
ADMIRALTY HOUSE	208—209
ANTHROPOLOGICAL SOCIETY	209—210
BAI SAKARBAI DINSHAW PETIT HOSPITAL	210—211
BANK OF BOMBAY	211—220
BOMBAY ART SOCIETY	220
BOMBAY BACTERIOLOGICAL SOCIETY	220—222
BOMBAY, BARODA & CENTRAL INDIA RAILWAY	
OFFICES	222—223
BOMBAY CLUB	223
„ HUNT	223—225
„ NATURAL HISTORY SOCIETY	226—227
„ OBSERVATORY (COLABA)	227—236
„ PRESIDENCY ASSOCIATION	236—237
„ RACES	237—238
„ SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS	239
BYCULLA CLUB	239—240
CHURCHES	240—250
COTTON GREEN.	251—253
CUSTOM HOUSE	253—255
DADAR DISTILLERY	255—257
DAVID SASOON INDUSTRIAL AND REFORMATORY	
INSTITUTION	257—258
DOCKS	258—278
ELPHINSTONE HIGH SCHOOL	278—279
FIRE TEMPLES	279—282
GENERAL POST OFFICE	282
GOLF CLUB (ROYAL BOMBAY)	282—284
GOVERNMENT CENTRAL PRESS	284—285
GOVERNMENT HOUSE	286—293
GOVERNMENT VETERINARY COLLEGE	293—294
GYMKHANAS	294—296
HIGH COURT	297—299
HOTELS AND TAVERNS	299—300
ICE-HOUSE	300—301

	Page
MAHIM SHRINE	301—304
MASONIC HALL	304—305
MINT	305—311
MOSQUES	311—314
MOTOR UNION OF WESTERN INDIA	314
MUNICIPAL OFFICES	314—316
ORIENT CLUB	316
PANJRAPOL	316—317
PAPER CURRENCY OFFICE	317—323
PARSI PANCHAYAT	323—328
PUBLIC FOUNTAINS	328—330
ROYAL ASIATIC SOCIETY (BOMBAY BRANCH)	330—334
ROYAL BOMBAY YACHT CLUB	334—335
SAILORS' HOME	335—337
SANITARIA AND DHARMASHALAS	337—338
SASSOON MECHANICS' INSTITUTE	339—340
SECRETARIAT	340—342
SIR J. J. SCHOOL OF ART	342—344
STATUARY OF BOMBAY	344—349
STRANGERS' FRIEND SOCIETY HOME	349—350
SYNAGOGUES	350
TECHNO-CHEMICAL LABORATORY	350—351
TELEGRAPHII OFFICE	351—352
TEMPLES	353—364
THEATRES	364—367
TIDAL OBSERVATORIES	367—368
TOWERS OF SILENCE	369—373
TOWN HALL	373—374
UNIVERSITY BUILDINGS	374—376
VICTORIA GARDENS AND VICTORIA AND ALBERT MUSEUM	376—380
VICTORIA JUBILEE TECHNICAL INSTITUTE	380—381
VICTORIA TERMINUS	381—383
WIDOWS' AND PENSIONERS' HOME	383
YOUNG MEN'S CHRISTIAN ASSOCIATION	383—384
YOUNG WOMEN'S CHRISTIAN ASSOCIATION	384
INDEX OF VOLs. I, II, AND III	i—xxxix



To the Honourable the Court of DIRECTORS of the UNITED COMPANY
of BOMBAY done after the Painting in the Court Room of the
Honourable Directors
by their Honor's most obliged
Servt for 1 Year in it Painted Year 1785 J. D. Ryall at the Black Bull in Lombard



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m of the
governor



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and most devoted Servant John Bowles

BOMBAY CITY GAZETTEER.

CHAPTER X.

THE MUNICIPALITY, PORT TRUST AND IMPROVEMENT TRUST.

THE BOMBAY MUNICIPALITY.

Up to the end of the eighteenth century, the urban administration of Bombay appears to have been conducted directly by the President and Council, who delegated their powers to individual officers of their own choosing. Thus in 1752 it is recorded that the Board were dissatisfied with the sanitary condition of the town and arrived at the conclusion that the evil "was in great measure due to the little regard the inhabitants in general pay to the scavenger, on account of his being always a junior servant", and therefore agreed "that a member of the Board be appointed to that office, and that all houses within the town be proportionately taxed for maintaining a sufficient number of labourers, carts and buffaloes for keeping the town clean". This system continued till 1792, when Parliament passed Statute 33, whereby the Governor-General in Council was empowered to appoint in the Presidency Towns Justices of the Peace who were authorized to appoint scavengers for cleaning the streets, to order the watching and repairing of streets and to levy for these purposes a rate not exceeding one-twentieth of the gross annual value of the houses, buildings and grounds in these towns. No special rules were laid down for the conservancy of the town and island of Bombay until 1812 when a "Rule, Ordinance and Regulation" was passed for the good order and civil government of the island. This gave certain powers to the Justices of the Peace. "Whether the powers entrusted to the Court of Petty Sessions as laid down in Rule, Ordinance and Regulation I

General account.

¹ Forrest's Selections (Home Series). Vol I. 1887.

of 1812 were abused or not", writes Michael,¹ "there is nothing to show; but the Government after a time perceived that a road was open to great abuse of power, and three years after the passing of that Regulation, they therefore promulgated another for enlarging, explaining and amending it." In this new Rule the powers of the executive authorities were limited, and it was no longer left to the Court of Petty Sessions to inflict such legal punishment "as the danger, audacity or repetition of the offences justified."

The next step forward was taken in 1827 when a Regulation (XIX of 1827) was passed prescribing rules for the assessment and collection of land revenue and for the collection of taxes on houses, shops, stalls and carriages, etc. These regulations, though conceived in a progressive spirit, were the source of a good deal of friction between the Bench of Justices and the other local authorities. The administration of the town by the Bench was also the subject of not unfrequent comment; and at length it was felt that some better system must be devised for dealing with the protection, sanitation and development of the growing town. Accordingly in 1845 an Act (XI of 1845) was passed for the better collection, management and disbursement of certain public funds and money for police and municipal purposes throughout the island of Bombay and Colaba. By this Act all municipal taxes paid into the Government treasury were formed into a Municipal fund, which was administered by an executive body styled the Board of Conservancy and composed of 7 members, of whom the Senior Magistrate of Police was Chairman and the Collector of Bombay an ex-officio member, the other five members being two European and three native resident justices, elected by the Bench or by such persons as Government might appoint to supervise and control the fund. These members were elected for three years, being eligible for re-election on the expiry of that period. Under the régime thus established, the Justices of the Peace were vested with the supervision and control of the fund, while in practice the Board of Conservancy administered it as they pleased. With the exception of Rs. 45,000 set apart

¹ Michael's History of the Municipal Corporation.

annually for police expenses, the Board in reality had entire control over the fund, and were empowered to make such improvements and carry out such public works, as in their discretion they deemed necessary. The duties of the Board were apparently quite distinct from those of the Petty Sessions. They had merely the control of the fund, and the supervision of the sanitary and other measures required for the improvement of the public health; but they possessed as a body no penal powers to enforce their orders.¹ At the outset the income of the Board amounted to roughly 2·88 lakhs and their expenditure to 2·79 lakhs, which comprised considerable sums spent on police, markets, repairs and scavenging.² The functions of an executive engineer's establishment, namely, the design and construction of new roads and sanitary works, and the repair and maintenance of old ones, were performed by an official known as the Superintendent of Repairs, who was appointed by the Bench of Justices, subject to the approval of Government, who continued his appointment only on condition of his discharging gratuitously the duties of Surveyor to the Court of Petty Sessions. Being appointed to the latter post by Government, his establishment under that head was paid from the Government treasury and not from the municipal fund. The inconvenience that might have arisen from the dual control thus exercised over the Surveyor to the Court and the Superintendent of Repairs was largely obviated by making one individual Chairman both of the Court of Petty Sessions and the Board of Conservancy.³ The Surveyor to the Court dealt with the regulation of buildings under the Building Act XXVIII of 1839 and with the prevention of nuisances under the Nuisance Act XIV of 1842.

The average expenditure of the Board of Conservancy during a period of eight years (1845-46 to 1852-53) was 2·37 lakhs per annum, out of which 1·06 lakhs were devoted to new works, one lakh to works requiring special sanction, and nearly Rs. 6,000 for road-widening (*i.e.*, set-backs), while the balance was expended upon the repairs and maintenance of public works. The municipal

¹ Michael's History of the Municipal Corporation.

² Bombay Times 20th October, 1849.

³ Report on the sanitary requirements of Bombay, 1855, pp. 7-8.

fund however never proved equal to the calls upon it, and on one occasion had to be replenished by the loan of a lakh of rupees advanced through the Bench of Justices by several native gentlemen of the city.¹ This fact, coupled with complaints of the inefficiency of the Board, eventually induced Government to alter materially its constitution by Act XXV of 1858. Under this Act three Commissioners, styled Municipal Commissioners for the Town and Island of Bombay, were appointed for the purpose of carrying out the provisions of the Act and for the conservancy and improvement of the city. One of these Commissioners was appointed by Government and the other two by the Justices. This system of a triumvirate, with equal powers but divided responsibility, never worked successfully, and the evils which Government had sought to counteract by the abolition of the Conservancy Board were prolonged, and in some degree intensified by the division of power, the absence of individual responsibility, the tedious routine, and the absence of power of enforcing obedience to the law. The only real difference between the Board of Commissioners and the Board of Conservancy was that the former drained the municipal fund of Rs. 24,000 a year more than the latter did.²

Accordingly in 1865 another Act was passed, whereby the Justices of the Peace were created a body corporate with perpetual succession and a common seal and with the power to hold lands, impose taxes and rates, and borrow money on the security of the same. The entire executive power and responsibility for the purposes of the Act was vested in a Commissioner appointed by Government for a term of three years. He had to lay before the Justices each year a budget of income and expenditure, which the latter had power to revise at a special general meeting. A Controller of Municipal Accounts was also appointed by Government for a like term and a Health Officer and Executive Engineer were likewise appointed by Government to be subordinate to the Commissioner.³

¹ General Administration Report, 1856-57.

² Michael's History of the Municipal Corporation.

³ Michael's History of the Municipal Corporation; Martineau's Life of Sir Bartle Frere.

This Act, as subsequent events proved, was marred by the fact that there was practically no control either by Government or the Bench of Justices over the Commissioner's powers of expenditure : and at an epoch when costly projects were the order of the day he was open to the temptation of spending the ratepayers' money too lavishly. In 1871 a serious crisis took place in municipal affairs and an inquiry, which was set on foot in response to the demands of the Justices and the public, showed that some amendment of the municipal constitution was necessary in order to secure a more efficient administration of the municipal estate, and to enable the Corporation to exercise more direct control over its expenditure. At the same time there was an agitation on the part of a considerable section of the public for the introduction into the management of municipal affairs of some measure of self-government. In March 1872 a Bill was accordingly introduced into Council to provide for the management of municipal affairs of the city, and to make better provision for the conservancy and improvement of the city and for the levy of rates and taxes.

The interest of the measure of 1872 lay in the form of municipal constitution which it proposed to introduce. The following were the chief constitutional provisions of the Bill as finally passed :—

(a) The grant of the franchise to certain classes of ratepayers.

(b) The creation of representative assemblies.

The powers in connection with the administration of municipal affairs formerly possessed by the Bench of Justices devolved upon two representative bodies, the Corporation and the Town Council. The outer assembly or Corporation consisted of 64 members, of whom one-half were elected by the ratepayers, and the rest were nominated in equal proportion by the Justices of the Peace and by Government. The functions of the Corporation were the fixing of municipal rates and the voting of the budget, coupled with the right of selecting representatives to sit in the Town Council. The Town Council consisted of 12 persons, 8 of whom were elected by the members of the

Municipal Corporation and 4 were the nominees of Government. From the 12 members thus appointed, Government selected one to be the Chairman of the Council. With a view to ensure the regular attendance of members a system of payment was introduced, under which each councillor received a fee of Rs. 30 for each weekly attendance. The Council, with the assistance of the Municipal Commissioner, prepared the budget, and a double audit of municipal accounts by the Council and the Corporation was provided for. All payments from the municipal fund were made by cheques signed by the Municipal Commissioner and two councillors : all contracts entered into by the Municipal Commissioner were to be in writing and to be reported to the Town Council, special sanction being required for contracts involving an expenditure of more than Rs. 5,000. The Municipal Commissioner was thus, in matters of finance entirely under the control of the Town Council. The annual expenses of the police were determined by Government, and any portion thereof, on the requirement of Government, had to be paid out of the municipal fund. The portion of the Bill which gave rise to the most prolonged discussion was the provision for the levy of a small tax upon cotton. This suggestion, though opposed by the mercantile members, was approved by the majority of the Council. Finally, however, it was withdrawn, as the levy of the tax was understood to be contrary to the wishes of the Government of India. A novel and important feature of the Bill was that it empowered Government to enforce the performance by the municipality of its duties to the public. This provision was not adopted without considerable opposition; and it was finally agreed that the power in question should be exercised only in matters connected with police, sanitation, and the water supply.

The Municipal Act of 1872 was passed tentatively for a term of three years, but the term was extended from time to time. As the Act was found to work satisfactorily on the whole, another Act was passed in 1878 continuing the principal Act of 1872 permanently with certain modifications, one of which was the conferment on the Municipal Commissioner of the right of being present at

maintaining, aiding and suitably accommodating schools for primary education ; for public vaccination ; for establishing and maintaining public hospitals and dispensaries and carrying out other measures necessary for public medical relief ; and generally to discharge such functions as promote or are likely to promote public safety, health, convenience or instruction.

Resting as all such measures must on the financial capacity of the city, the Corporation is helped in the discharge of its duties by the Standing Committee and the Municipal Commissioner ; and though the Corporation may and does on its own initiative authorize the prosecution of works and projects which in its own opinion may conduce to the benefit of the city, it is with the Standing Committee aided by the advice of the Municipal Commissioner, that the recommendation must lie as to the source from which the funds are to come. It is the Municipal Commissioner who by law is required to submit yearly to the Standing Committee an estimate of the expenditure which must or should be incurred by the Corporation, and to indicate the sources from which the expenditure is to be met and the taxation which it will in his opinion be necessary or expedient to impose or the loans required to be raised. These proposals with such modifications as the Standing Committee may think advisable have to be considered by the Corporation, who determine what taxation shall be levied subject to the minima and maxima fixed by law, and generally what expenditure shall be incurred, and who have the power to either refer the estimates back to the Standing Committee or adopt them as they stand or subject them to such alteration as they deem expedient. Funds required outside the budget estimates are asked for by the Municipal Commissioner from time to time as necessity arises, but no funds can be allotted without the prior approval of the Standing Committee and the Corporation. For the proper disbursement of funds allotted by the Corporation for the city's benefit the Municipal Commissioner is primarily responsible, but the Standing Committee aided by its secretary and two auditors, appointed by the Corporation, watch the interests of the city by seeing that no

payments are made except under due authority and that the accounts are correctly prepared.

Though the entire executive power is vested in the Municipal Commissioner, the Corporation have the power to require the Commissioner at any time to produce any official document that they think it advisable to have placed at their disposal in the interests of the efficient administration of the city, and the Standing Committee and the auditors may require the production of any document bearing on the accounts, the receipts or the disbursements of the public money. The Corporation may also require the Commissioner to furnish a report by himself or to obtain from any head of a department subordinate to him and furnish with his own remarks thereon a report upon any subject connected with the municipal government of the city. In their financial inter-relations the position of the Corporation, the Standing Committee and the Municipal Commissioner may be briefly stated to be that the Municipal Commissioner as chief executive officer makes proposals, but has no power to spend money except in the direction determined by the two superior authorities, that the Standing Committee review the Municipal Commissioner's proposals for the benefit and orders of the Corporation, and that the Municipal Corporation finally determine the volume and direction of the stream of income and expenditure. Except in the case of the Executive Engineer, the Executive Health Officer, the Secretary Schools Committee and the Auditors, whose appointment rests with the Municipal Corporation, and of the Municipal Secretary who is appointed by the Standing Committee, the number and the salaries of the various officers and servants of the Corporation are determined by the Standing Committee on the recommendation of the Municipal Commissioner, but no office of which the aggregate emoluments exceed Rs. 200 per mensem can be created without the sanction of the Municipal Corporation. A very large proportion of the expenditure incurred yearly from funds allotted by the Corporation is disbursed on contracts entered into after public competition. In the making of such contracts the responsibility for the efficient administration of the funds allotted is divided between the

Standing Committee and the Municipal Commissioner. It is within the power of the Municipal Commissioner to make contracts for sums not exceeding Rs. 5,000 on his own responsibility, provided that all contracts exceeding Rs. 3,000 are entered into either after inviting public tenders or after the Standing Committee have accorded their sanction to the invitation of public tenders being dispensed with. In regard to contracts exceeding Rs. 5,000, the Municipal Commissioner has the power to accept such a contract as may appear to him most advantageous to the Municipality taking all the circumstances into consideration, but the approval of the Standing Committee to the contract being entered into is necessary before the contract can be considered valid by law. Every contract has in accordance with the law to be made by the Municipal Commissioner on behalf of the Municipal Corporation. It should be noted that these independent financial powers vesting in the Standing Committee and the Commissioner are to be so exercised that liability for any expenditure shall not be incurred without the sanction of the Corporation if the discharge of any of the functions is likely to involve expenditure for any period or at any time after the close of the official year. Certain powers are further vested in the Standing Committee and the Municipal Commissioner in regard to the disposal of moveable properties. These the Commissioner may dispose of by sale or otherwise if the value in each instance does not exceed Rs. 500. With the sanction of the Standing Committee he may dispose of such properties up to a limit not exceeding Rs. 5,000. The Commissioner in consultation with the Standing Committee has also to arrange for the investment of all surplus balances either in the Bank of Bombay, in public securities or in such banks in Bombay as the Standing Committee, subject to the control of the Corporation, may from time to time select. All the financial transactions of the Municipality are recorded by the Municipal Commissioner in such manner and in such forms as the Standing Committee from time to time prescribe. A weekly scrutiny of these accounts has to be conducted or caused to be conducted by the Standing Committee and a weekly abstract of all

receipts and expenditure is required to be published, signed by not less than two members of the Standing Committee and the Municipal Secretary. The receipts and disbursements are subject to further scrutiny at the hands of two Municipal Auditors appointed by the Corporation, whose duty it is to forthwith report to the Standing Committee any material impropriety or irregularity in the expenditure or in the recovery of moneys due to the Corporation. It is also within the province of the Governor-in-Council at any time to appoint an Auditor for the purpose of making a special audit of the municipal accounts.

The Standing Committee is required to frame in consonance with any resolution passed by the Corporation regulations fixing the securities to be furnished by employés, regulating the grant of leave to and the allowances to be received by employés while on leave, the remuneration to be paid to acting officers or servants, determining the contributions to be paid for pension or for provident fund and the amount of such pensions, gratuities or compassionate allowances to be received by them or their heirs. All such regulations governing the service of employés must receive the confirmation of the Corporation and any regulations relating to the pensions, gratuities and compassionate allowances of employés require the confirmation of the Governor-in-Council. The interpretation of all such rules and regulations lies with the Municipal Commissioner, any breach or misinterpretation thereof being brought to notice by the municipal auditors.

The control over the whole municipal staff with the exception of the Municipal Secretary, who is a subordinate of the Standing Committee and the Corporation, vests in the Municipal Commissioner who can fine, reduce, suspend or dismiss any servant for breach of rules, neglect of duty or misconduct, provided that—(1) No officer or servant whose monthly emoluments exceed Rs. 300 can be dismissed without the approval of the Standing Committee. (2) The officers appointed by the Corporation, *viz.*, the Executive Engineer and the Executive Health Officer can be dealt with by the Corporation alone.

When once the works to be undertaken and the services to be rendered are finally determined by the Corporation the Municipal Commissioner is the sole executive authority under the law for the prosecution and control of such works and services. To assist him in the discharge of these duties the Standing Committee and the Corporation are required by law to place at his disposal four Heads of departments, *viz.*, (1) an Executive Engineer, (2) an Executive Health Officer, (3) an Assessor and Collector, and (4) a Chief Accountant. Each of these is given such deputies or assistants as the Municipal Commissioner and the Standing Committee may consider desirable. On the Executive Engineer, subject to the orders and control of the Municipal Commissioner, devolves the construction, maintenance and upkeep of all drains and water-courses vesting in the Corporation, of all sewage pumping stations with their ventilation, connected pipes, and drains, of all lakes and water works within and without Bombay, supplying water to the island. The Executive Engineer is also responsible for the efficient maintenance and watering of the roads, for the creditable lighting of the city, for the acquisition of lands for set-backs in narrow or congested streets, for the inspection of buildings in course of construction after their plans have received his approval. All municipal properties are in his charge and it is his duty to keep them in repair. His jurisdiction also extends to the Municipal Workshops, and the works and repairs executed therein. In short he is the expert adviser to the Municipal Commissioner on all engineering questions. In the same way on all questions of public health and sanitation the Executive Health Officer is the expert adviser appointed to assist the Municipal Commissioner. Under him are all dispensaries and hospitals maintained at Municipal expense; he directs, under the control of the Municipal Commissioner, the conservancy of the city; he devises measures for the speedy removal of all refuse, rubbish and excrementitious matter; he by his subordinate staff examines the fittings of houses and the gullies attached thereto for the removal of sullage and water; he it is who advises on the control of epidemic diseases, who is responsible for public vaccination, and the sanitary sur-

roundings of dwellings ; he also advises on the regulation of dangerous and offensive trades ; arranges for the registration of births and deaths ; and analyses food, drugs, drinks and the water-supply.

The duty of the Assessor and Collector is to assist the Municipal Commissioner in all matters relating to the valuation of buildings and lands in accordance with well established rating laws or judicial decisions, to keep a record of all lands and buildings with a description thereof and their rateable values, and to have such rateable values authenticated by the Municipal Commissioner on the 1st day of April of each year : on such approved valuations to issue taxation bills at rates approved by the Corporation and Standing Committee, and attend to their efficient and speedy collection, to advise what rebates are to be given to house-owners and landlords on account of non-occupancy of buildings or lands, to inspect properties with a view to determining if the rateable values recorded require any alteration, and to hear complaints by the public against the rateable values proposed to be fixed for purposes of taxation. The Chief Accountant is the officer who is required to give the Municipal Commissioner the benefit of his advice on all matters relating to the efficient record of and check over expenditure, to interpret, subject to control by the Municipal Commissioner, the various rules and regulations framed from time to time dealing with the leave, acting and other allowances, pensions and other personal matters affecting the employés' service, to advise the Commissioner as to the progress of expenditure, to assist him in preparing the yearly budget estimates of income and expenditure with the rates of taxation to be levied, to advise the various departments of the Municipality on all financial, audit, and account questions subject to the final orders of the Commissioner, to report any apparent extravagance in outlay, to advise on the borrowing capacity of the Corporation, to keep a watch over rates paid for labour and stores, to advise on contracts to be entered into and generally to aid the Commissioner in controlling expenditure and ensuring a correct record of the account transactions of the Municipality. The Chief Accountant has further to

receive all moneys payable to the Municipality and arrange for their subsequent payment into the Government Treasury ; to audit and subsequently check all payments to the staff, contractors and others to whom the Municipality is indebted ; to advise on the investments to be made of surplus funds, and to arrange for the payment of all sinking fund instalments as they fall due.

The other officers who act as assistants to the Commissioner in his executive functions are the Revenue and Refund Audit Officer,¹ who is chiefly responsible for a check over the revenues collected and paid into the Chief Accountant's office and over refunds of town duties paid on goods imported and re-exported within six months ; the Superintendent of Markets and Slaughter Houses ; the Superintendent of Gardens, the Superintendent of Licenses and the Storekeeper. The other principal officers of the Municipality are the Deputy Executive Engineer, Water Works² ; the Deputy Executive Engineer, Drainage ; the Deputy Executive Engineer, Mechanical Branch, who assists the Executive Engineer in his duties ; the Assistants to the Executive Health Officer who have charge of the health administration, medical relief and conservancy of the city under the Executive Health Officer ; the Deputy Accountant, who assists the Chief Accountant.

Financial History.³

At the close of the eighteenth century the financial power in regard to the management of municipal affairs in the City of Bombay was vested by Act of Parliament (Statute 33, Chapter 52) in Justices of the Peace, whose duty it was "from time to time to make an equal assessment or assessments on the owners or occupiers of houses, buildings and grounds . . . according to the real annual values thereof." The maximum assessment that could be levied was limited to 5 per cent. of the gross annual values of the properties,

¹ The Officer also hears the annual complaints against assessment of properties and scrutinizes claims to and sanctions the grant of refunds of property taxes and of wheel tax as also of town duties on the report of goods which on their entry into the city have paid such duties.

² It is now (1909) proposed to make this an independent office under the direct control of the Municipal Commissioner.

³ This section and the preceding one have been written from notes supplied by Mr. W. E. Waite, the Chief Accountant, Bombay Municipality.

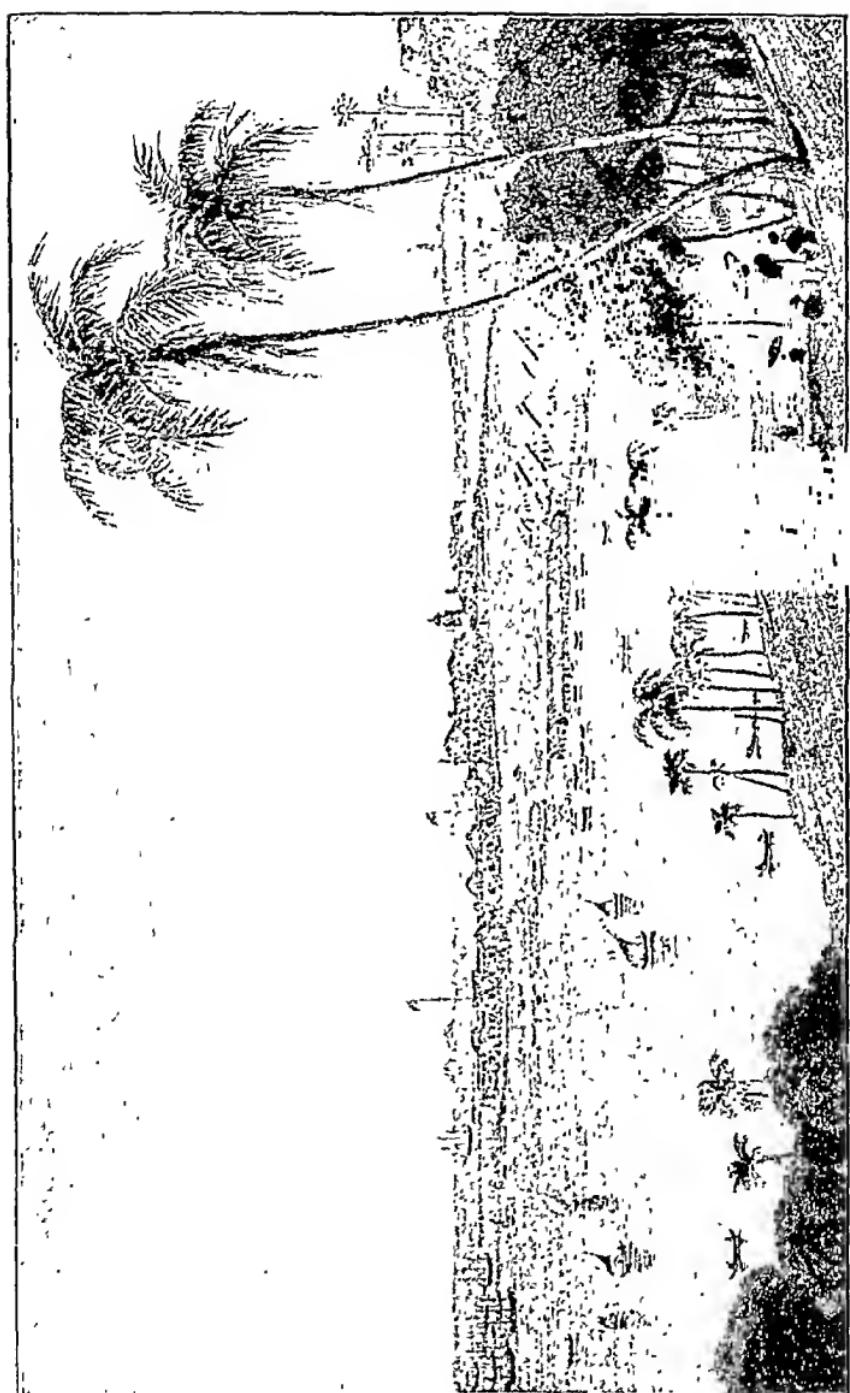
unless otherwise ordered by the Governor-in-Council, when a further $2\frac{1}{2}$ per cent. could be levied. The proceeds of the tax were to be employed towards the "repairing, watching and cleansing" of the city and were to be "disposed of according to the orders and directions of the Justices in sessions." By Regulation XIX of 1827 rules were prescribed for the assessment and collection of land revenue, for collecting taxes on shops and stalls, on beating the *bataki*, on country music, on carriages and horses, &c. The financial powers of the Bench of Justices were regulated from time to time by rules, ordinances and regulations framed by Government, and seem to have remained unchallenged till the year 1833, when the Supreme Court of Judicature desired to be furnished with an account of the income and expenditure of the assessment funds, and a report as to what roads were in need of repairs which could not be carried out for want of funds. The Bench of Justices, in reply, asserted their right to the control over the collection and disposal of funds which had been vested in them by the legislature, and denied the right of the High Court of Judicature to exercise any powers over such funds. In the same year (1833) the Governor of Bombay proposed and subsequently ensured the appointment of a military officer to the control of the police, combined with the collection of assessments levied by the Bench. The consequent retirement of the Collector of Assessment appointed by the Justices brought forward the question of the right of the Bench to compensate their retiring servant. Government withheld the compensation awarded by the Bench. Other instances of friction occurring, Government contemplated a change in the law; and in 1836 addressed the Bench of Justices with this end in view. Notwithstanding the protests of the Justices, Act XI of 1845 was passed whereby a Board of Conservancy was created, consisting of seven members, of whom the Senior Magistrate of Police was Chairman, the Collector of Bombay *ex-officio* a member, and the remaining five were Justices of the Peace, two being European and three native resident Justices.

Under this Act all sums received from the tax on houses and lands, shops or stalls, beating the *bataki*, &c., as speci-

fied in Regulation XIX of 1827, all fines and penalties levied by the Court of Petty Sessions, by the Magistrate of Police and by any Justice of the Peace, all sums (less actual cost of management) collected by the granting of licenses for the sale of spirituous liquors, were for the first time credited to a "Municipal Fund", the control over which was vested in the Bench of Justices. The functions of the Board of Conservancy were purely executive, they being authorized with the approval of the Justices of the Peace to construct new roads or streets or other public works tending to the improvement of the island and connected with the comfort and health of the inhabitants. The appointment of the staff required to carry on the executive functions vested in the Board subject to approval by the Justices and sanction by Government. Such persons, it was decided, "shall be under the immediate orders and control of the said Board." Appeal lay by the Conservancy Board to Government against any decision of the Bench of Justices. The audit of all receipts and disbursements was by this Act to be carried out by "such persons as the Governor-in-Council shall appoint".

Certain inherent defects in Act XI of 1845 subsequently attracted the attention of Government, and after a fair trial it was proposed in 1856 to revise the constitution by placing the management of municipal affairs in the hands of three Commissioners whose remuneration was fixed. Again the Bench of Justices protested and again without avail; for the proposals of Government were given effect to in Act XXV of 1858 which came into force on the 7th July 1858. In so far as financial control went, it was specifically provided that "the Commissioners shall not be subject to any check or control on the part of Justices," though a proviso existed that any work contemplated or salaries to be paid should receive the approval of the Justices, an appeal lying to Government by the Commissioners in the event of dispute. The principal revenues, which were paid into a Municipal Fund, controlled by the three Commissioners, were to be derived from:—

- (1) Assessment of houses, buildings and lands at 5 per cent. of the annual value, to be raised if necessary to $7\frac{1}{2}$ per cent.



From the Oriental Annual by Caunter.

VIEW OF BOMBAY FORT FROM MAZAGON, 1836.
(Naoroji Hill on the right and Colaba Lighthouse in the distance.)

- (2) A tax on carriages, carts, hackeries, horses, ponies and mules kept in the town and plying for hire.
- (3) A levy of town duties collected by and under the management of the Commissioner of Customs on certain animals, foodstuffs and materials.
- (4) Receipts from licenses for sale of spirituous liquors.
- (5) Miscellaneous receipts from fines and beating the *bataki*, &c.

Government continued to hold authority in the disbursement of the fund in certain directions, as Section XXVIII of the Act provided that the funds could be diverted "to the execution of any public works tending to the improvement of the said town, which may be sanctioned by the Governor-in-Council, although not expressly mentioned in any of the said Acts." Government also had a call on the funds for payment of charges for the Vehar water works and certain drainage works. The Act which gave birth to the three paid Commissioners in 1858 was found in practice to be as defective as the Act of 1845 which constituted a Board of Conservancy and already in 1861 proposals for its repeal and amendment were advanced. After very detailed discussion Act II of 1865 was brought into effect from the 1st July 1865, and for the first time greater financial control was handed over to the principal representatives of the people. The Act clearly laid down that the "Municipal Fund of the City of Bombay," together with all property of what nature or kind soever which may become vested in the Justices was to be under "the direction, management and control of the Justices." Though the control of the municipal fund was vested in the Justices of the Peace, the "entire executive power and responsibility for the purposes of this Act" was vested in one Commissioner, while Government retained in its own hands the appointment of the Commissioner and the principal officers subordinate to the Commissioner, *vis* :—

- (1) The Controller of Municipal Accounts, who signed cheques on the fund conjointly with the Commissioner and had the right to correspond

directly with the Governor-in-Council and the Justices of the Peace.

- (2) The Executive Engineer who was under the immediate orders of the Commissioner.
- (3) A Consulting Officer of Health, who was not precluded from holding any other office, which might not interfere with the performance of his duties.

While it was incumbent on the Justices to hold only four meetings in the year, the powers of the Commissioner were practically unlimited. He was the senior municipal officer, and had to be held in check by a junior officer (the Controller of Accounts) appointed also by Government: he had limitless power in regard to entering into contracts, and his accounts were subject to audit "once in every year at the least" by auditors appointed by the Justices. For the first time in any legal enactment, the Commissioner was required to place before the Justices a budget estimate of income and expenditure, which the Justices had the power to pass or to reject or to modify."

The revenues of the city, after the passing of Act II of 1865, were derived principally from the following sources:—

- (1) An annual rate of 5 p.c. to be raised by Government with the concurrence of the Justices to a maximum of 10 p.c. on the annual value of houses, buildings and lands in the city.
- (2) Taxes on carriages, horses, ponies and mules.
- (3) A lighting rate not exceeding 2 p.c. of the annual value of houses, buildings and lands.
- (4) Such annual or other principal water-rates as may be considered sufficient by the Commissioner, concurred in by the Justices and approved by Government for the maintenance, repair, extension, improvement and other expenses of the Vehar water works.
- (5) License tax on professions, trades and callings.¹
- (6) Receipts from markets for stallage, rents and tolls paid by persons authorized to sell any articles in the market.

¹ Abolished by Act IV of 1867.

- (7) An annual rate of 2 per cent.¹ upon the occupiers of houses, buildings and land in the city to provide for the annual expenses of the Police.
- (8) All fines and penalties levied under the Act.
- (9) Duty on tobacco and snuff.
- (10) Liquor license fees.
- (11) Halalkhore cess.

It is important to notice that indirect taxation by "town duties" was abolished under this Act. One very important power vested in the new corporation of Justices was the power to borrow on mortgage of the rates and taxes with the sanction of the Governor-in-Council such sums as might be required to carry out any permanent work for the city, provided the total sum borrowed did not at any time exceed ten times the average annual sum received from the rates and taxes during the preceding three years and provided due provision was made for the repayment of loans so raised.

The new authorities succeeded to a far from desirable financial heritage, it being publicly stated later that the Municipal Commissioner "had succeeded to a bankrupt exchequer". The difficulties were further increased by the unsatisfactory manner in which the accounts had been maintained. It was pointed out in a memorandum prepared by a competent auditor that "if Government or the Commissioner should wish to ascertain the true state of the whole affairs of the Municipality, or any branch thereof, regarding the assets, including outstanding liabilities, live and dead stock, and profit and loss, or of what the money in the Bank is composed, the system would fail to give the information". The neglect, moreover, of sanitary and other requirements of the city in the years prior to 1865 necessitated a very heavy outlay in 1865; and under three heads of expenditure alone, *viz*, scavenging and scavenging plant, repairs to roads, and watering roads, the expenditure for 1865 was in excess of that for 1864 by 14 lakhs. At the close of 1865 the financial prospects of the Municipality were extremely disquieting. The income and expenditure account up to the close of that year showed an excess over

¹ Raised to not more than 3 p. c. by Act IV of 1867.

income of Rs. 2,84,301, but if undischarged liabilities, with unrecovered receipts, be taken into account, the balance against the fund worked out to Rs. 9,90,918. It is true that the municipal fund had advanced to the water fund a sum of Rs. 9,21,408, but the municipal fund on the other hand had entrenched for its own purposes on the drainage fund to the extent of Rs. 14,90,213.

In these circumstances it is not surprising that, with the full concurrence of the Municipal Commissioner, a committee was formed by the Bench of Justices in July 1867 to enquire into the financial position of the Municipality of Bombay. The labours of this committee showed that during the years 1866, the deficit in the municipal fund amounted to Rs. 4,01,044, the total excess of expenditure over income of the amalgamated funds amounting to Rs. 2,25,854. The deficit estimated by the committee for 1867 was Rs. 3,12,680; and as observed by the committee "adding this to the deficit of the municipal fund on 31st December 1866, *vis.*, Rs. 16,76,899-11-9 it appears the probable deficit on 31st December 1867 will be Rs. 19,89,579-0-9". The committee found that the control of the Justices over the expenditure was in effect nominal, that the check over the Municipal Commissioner by the Comptroller of Accounts had not been effective, that budget estimates had been exceeded without due authority, that the expenditure had up to that time been in excess of the income : that the outstanding debts were becoming larger year by year, and that "until this state of affairs is reversed, there is not the remotest prospect of a balance being created of the municipal fund". The committee absolved the Municipal Commissioner from any great blame, as he "was left to himself and acted boldly and to the best of his judgment". Yet the fact remains that without provision being made to write off the drainage debt, amounting to nearly Rs. 15,00,000, the Municipal exchequer was in a state of insolvency. The committee's report was submitted on the 2nd December 1867 : and on the 26th April 1868 the following expression of approval of the Municipal Commissioner's administration was recorded :—"That the meeting tenders its cordial

thanks to Mr. Crawford and his colleagues for the able manner in which they have respectively contributed to the satisfactory working of the Bombay Municipal Act of 1865."

During 1869 Government came to the assistance of the hard-pressed Municipality. The amount actually required by the Municipality as determined by the Comptroller of Municipal Accounts was nearly 23 lakhs, but Government advanced only 15 lakhs, repayable with interest at 5 p. c. per annum within ten years from the 1st August 1869. A town-duties Act was also passed during the year and tended to help the crippled exchequer. But already were heard the rumblings of the distant storm that was to break upon the Municipal Commissioner, and committees were sitting to discuss the constitution of the Corporation and the position of the executive, the question of Municipal taxation and its incidence, the financial position of the Municipality at the introduction of the Municipal Act of 1865 and the value of the real property of the Municipality. The press fulminated against the methods adopted by the executive; individual members of the Bench of Justices insisted on retrenchment and reform in the existing machinery for financial control; and Government appointed a commission of enquiry into the methods followed and the financial position of the Municipality. In the end, Government had once more to come to the rescue of the Municipality and to pass Act II of 1872 providing for the repayment of a further sum of 15 lakhs advanced to the Justices of the Peace for the purposes of payment of (1) the amount due for principal and interest on a sum of 2 lakhs advanced by Government in 1871; (2) the principal and interest on a loan given by the Bank of Bombay; (3) repayment of principal and interest to the sinking funds which had been utilized for ordinary revenue and loan expenditure.

A quinquennial review placed by the Municipal Commissioner before the Bench of Justices in September 1871 showed that, while the ordinary income of the Municipality for the six years 1865 to 1870 had been Rs. 1,89,27,143, the ordinary expenditure was Rs. 2,26,98,519, giving a net deficit of Rs. 37,71,376. With such results the system which gave practically

unlimited power to one Commissioner passed away, and Government yielding to the growing desire and capacity of the people for a greater share in the administration of their local affairs passed Bombay Act III of 1872 (The Bombay Municipal Act of 1872), as amended by Act IV of 1878 and other legislation up to the 1st September 1878. These enactments are commonly known as "The Bombay Municipal Acts, 1872 and 1878".

Under these Acts all moneys to be received by the Commissioner were to be forthwith paid into the Government treasury and no payment could be made out of the municipal fund without the sanction of the Town Council, all cheques being signed by the Municipal Commissioner, one member of the Town Council and the Municipal Secretary. The Town Council had to conduct a weekly audit of the municipal receipts and disbursements and to call on the Municipal Commissioner to forthwith furnish any explanation in regard to receipts and disbursements. Auditors were also to be appointed by the Corporation to examine the accounts from week to week. The proposed expenditure of the Municipality was to be laid annually by the Municipal Commissioner before the Town Council and that body was to "approve or reject or to alter all or any of the items entered therein", due regard being had to the requirements of the law. The Town Council with the assistance of the Commissioner had also to prepare an estimate of the Municipal income and proposals for taxation. All such proposals had to be submitted to the Corporation, which passed final orders on the expenditure proposed and the taxes to be levied. The entire executive power and responsibility for the purposes of the Act still vested in the Commissioner, but the Controller of Accounts, who was the financial check hitherto on the Commissioner, disappeared and his place was taken by the Town Council. An Executive Engineer and an Executive Health Officer had to be appointed by the Corporation, subject to confirmation by Government. The unlimited power vested in the Municipal Commissioner by Act II of 1865 in regard to the making of contracts was considerably curtailed, and all contracts exceeding Rs. 5,000 were subject to control by the Town Council.

and all contracts over Rs. 2,000 were open to public competition.

The following were the principal sources of income of the Municipality under the Acts brought into force :—

- (1) A consolidated rate of not less than 8 p. c. and not more than 12 p. c. of the annual value of houses, buildings and lands in the city.
- (2) A water-rate of so many per centum of the annual value of houses, buildings and lands as the Corporation may think sufficient for the maintenance, repairs, &c., of the water works.
- (3) A halalkhore rate of not more than 3 p. c. of the annual value of houses, buildings and lands.
- (4) In place of (2) a rate to be determined by the Commissioner for the supply of water by measurement or at a reasonable fixed rate.
- (5) Tolls on labour carts entering the city.
- (6) Town duties on grain, wines and spirits, beer, sugar, ghi, timber excluding railway sleepers, firewood.
- (7) Tax on insurance companies of not less than Rs. 500 and not more than Rs. 1,000 per annum.
- (8) License fees paid for the regulation of certain trades, such as tallow, boiling or storing offal, blood, bones, rags, &c., &c.
- (9) Taxes on carriages, horses, ponies and mules.
- (10) Tobacco duty and licenses.
- (11) Market fees.
- (12) Liquor licenses.

By Act V. of 1878 the sums collected by and credited to the Corporation for fees on liquor licenses were compounded for a lump sum payment to the Municipality of Rs. 1,43,750, all control over the liquor traffic being thenceforth taken over by Government. Owing to the extra expenditure involved in the introduction of Tansa water into the city, it became necessary to increase the revenues of the Municipality, and for that purpose Act

No. III of 1886 was passed altering the "town duties" tariff as follows :—

		Old tariff.	New tariff.
		Annas.	Annas.
(1) Grain.	Per <i>khandi</i> ...	4	6
(2) Sugar.	Per cwt. ...	1½	8
(3) Petroleum.	Per imp.-gallon ...	Nil	½

Act III of 1888 closely followed the legislation of 1872 and 1878, and created the following Municipal authorities charged with carrying out the provisions of the Act, viz.:— (i) A Corporation. (ii) A Standing Committee. (iii) A Municipal Commissioner. The constitution of the Corporation was slightly altered and consisted of 72 Councillors as follows :—36 elected at ward elections by the ratepayers, 16 elected by Justices, 2 elected by Fellows of the University, 2 elected by the Bombay Chamber of Commerce, 16 appointed by Government. The Chairman of the Corporation became the "President." The constitution of the Standing Committee remained the same as that of the Town Council, except that it elected its own chairman instead of Government appointing him. Except when it was otherwise expressly provided in the Act, the Municipal government of the city vested in the Corporation. The functions of the Municipal Commissioner remained the same, i.e., the entire executive power for the purposes of the Act vested in the Commissioner. Provision was made for the appointment by the Corporation of a Deputy Commissioner, subject to the approval of Government. The Standing Committee continued to appoint its own Secretary. The relative powers of the three bodies, viz., the Corporation as the custodians of the city's purse, the Standing Committee as the financial advisory body and the Municipal Commissioner as the only executive officer responsible to the Corporation, remained practically the same as in the Acts of 1872 and 1878. The directions in which the revenues could be utilized were very clearly defined and the obligatory and discre-

tionary duties of the Corporation were definitely laid down. The Corporation were also required to provide and pay "to Government such proportion of the annual expenses of the police of the city as Government shall from time to time determine."

The Municipal taxes were defined as follows :—(1) Property taxes to be levied on buildings and lands in the city as follows—(a) A water tax of so many per centum of their rateable value as the Corporation may deem expedient. (b) A halalkhore tax not exceeding 3 per centum of their rateable value. (c) A general tax of not less than 8 and not more than 12 per centum of their rateable value. (d) A fire-tax of not more than $\frac{3}{4}$ per centum of their rateable value. (2) A tax on vehicles and animals. (3) A toll on vehicles entering the city from Salsete. (4) Town duties. In addition the following items of revenue contributed to the income of the Municipality :—(1) Liquor licenses. (2) Tobacco duty and licenses. (3) License fees paid for the regulation of certain trades within the city. (4) A rate for water taken by meter measurement.

The advent of the plague in 1896 showed the inadequacy of the law in regard to the control of epidemic diseases and resulted in Act III of 1897 being passed, whereby the financial control over the expenditure on plague was taken out of the hands of the Corporation and vested first in a Plague Commissioner, and subsequently in the Municipal Commissioner. Once more the Municipal exchequer was subjected to severe strain. Balances which had been carefully, perhaps too carefully, conserved, and which at the end of 1896, stood at over 24 lakhs, were soon dissipated ; and at the end of 1897-98 the plague expenditure had risen to over 24 $\frac{3}{4}$ lakhs and the surplus balances were 3 $\frac{3}{4}$ lakhs. By a contribution of 14 $\frac{1}{2}$ lakhs from Government, by the strictest economy compatible with efficiency, and a revision of the methods of assessment of properties in the city, the surplus balances were again built up. But the expansion of the city, an advance in the standard of living which entails increased emoluments to the staff, and the prevalence of scarcity in 1908 and 1909 have again caused a reduction in the surplus balances which at the close of the year 1908-09 stood at 8 \cdot 21 lakhs.

The attempt to rehabilitate the city's finances, combined with the enormous expenditure called for in respect of the sanitary amelioration of the city has demanded very great sacrifices. Within five years from the year 1897-98, which might be taken as the beginning of the plague period, the Corporation spent over 33 lakhs on the better drainage of the city, and within the next five years had increased this sum to 57½ lakhs, besides pledging its future income for further drainage works to the extent of nearly 20 lakhs. The department of Public Health, which in 1896-97 cost under Rs. 14,00,000, rose in five years to over 22 lakhs, and in 1908-09, besides a charge of nearly 2½ lakhs for special plague measures, cost more than 24 lakhs to maintain and administer. The maintenance charges of the Engineering department, which in 1896-97 aggregated little over 14 lakhs, in 1908-09 totalled more than 22½ lakhs. To the close of 1908-09 the total expenditure on plague measures aggregated 70 lakhs which was financed as under :—

	Rs.
(1) From a plague loan raised by the Municipality 20,00,000	
(2) From the Government contribu- tion 14,50,000	
(3) Advances from loan funds ... 25,10,052	
(4) From current revenues ... 10,70,346	
	<hr/>
	70,30,398

Added to these heavy charges came the further price which the city had to pay in the interests of improved sanitation, when by Act IV of 1898 (The City of Bombay Improvement Act) "a lump-sum not exceeding 2 per centum on the total rateable value of buildings and lands in the city", was added to the taxation of the city. The sum paid in liquidation of this obligation amounted to 7·80 lakhs on the 1st April, 1909. Were it necessary for the purposes of the City Improvement Trust to levy the maximum demand, the additional direct taxation to the city would aggregate nearly 8½ lakhs of rupees per annum on the existing rateable value.

A dispute, which for nearly three decades proceeded intermittently between Government and the Corporation in regard to the city's liability for police charges, medical relief and primary education, was concluded by the passing of Act III of 1907, whereby the city was relieved of all liability for police charges in return for taking over the control of vaccination, medical relief and primary education, and making a certain contribution to higher education, which had hitherto fallen on Government. Vaccination has thus become one of the obligatory functions of the Municipality ; while in regard to medical relief the Municipality has to pay monthly to Government the sum of Rs. 34,542 for the management of the medical institutions referred to in schedule U of the above-mentioned Act. With this contribution Government undertakes to maintain the institutions at their existing standard of efficiency ; and if any new institutions are required, the Municipality is bound to provide them at its sole cost. The Government grant of Rs. 18,000 a year to the Acworth Leper Asylum at Matunga has also ceased, and the Municipality is now wholly responsible for the maintenance of the institution: Under the Act the Municipality is further bound to contribute monthly Rs. 2,083 towards the up-keep of the Prince of Wales' Museum of Western India (under construction) and to bear the entire cost of the maintenance of the Queen's Statue on the Esplanade and the Victoria and Albert Museum. Under the head of education, the Municipality is responsible for the control of all primary schools and for the amount hitherto spent by Government on primary education in the city, exclusive of building grants.

The revenue and expenditure of the Municipal Corporation for different periods since 1865 is shown on the next page. The municipal receipts in 1908-09 were nearly Rs. 1,02,86,000. The general tax¹ contributed about Rs. 33,00,000. It consists of a tax on houses and lands, levied at at 8 per cent. on the net annual letting value of

*Revenue
and expendi-
ture.*

(¹) The tax before 1877 was separately levied as house rate, police rate and lighting rate. In 1877 it was consolidated and levied at 2 p. c till 1881, when it was fixed at 8 p. c. In 1886-87 it was raised to 8½ p. c. and again it was brought down to 8 p. c. in the next year. In 1898-99 it was raised to 9 p. c. and next year to 12 p. c. In 1901-02 it was again lowered and brought to 10 p. c. and in 1905-06 to 8½ and in 1906-07 to 8 p. c.

houses and lands. The receipts from other taxes levied under the provisions of the Municipal Act are town duties 13 lakhs, wheel tax and tolls 5 lakhs, licenses for trades, land conveyances and music 1 lakh, halalkhore tax 11 lakhs, water tax 20 lakhs, market receipts 5 lakhs, and receipts from Government for liquor licenses and tobacco duty 4 lakhs. The average incidence per head of population was Rs. 8.14.11. The expenses in the same year amounted to nearly 73 lakhs, excluding the amounts paid toward the municipal debts and investments. Of this sum about 3 lakhs were expended on education, 7 lakhs on medical relief and plague expenses, 17 lakhs for the maintenance of the fire brigade, 4.5 were contributed to the Improvement Trust, and 50 lakhs were spent in the Engineering and Health departments and a large portion was spent for carrying out repairs, road making and conservancy.

REVENUE AND EXPENDITURE OF THE BOMBAY MUNICIPALITY.

In thousands of rupees (000s omitted.)

Year	Receipts	Expenditure	Year	Receipts	Expenditure
1865	23.64	49.59	1887-8	51.07	58.15
1866	29.15	36.02	1888-9	49.66	52.01
1867	30.41	42.16	1889-90	53.42	50.42
1868	38.53	34.77	1890-1	61.66	56.85
1869	33.93	31.31	1891-2	62.33	57.62
1870	37.08	33.92	1892-3	66.73	65.46
1871	28.71	38.05	1893-4	67.03	69.64
1872	30.48	31.16	1894-5	65.39	63.73
1873	33.24	30.45	1895-6	67.62	67.03
1874	29.81	29.91	1896-7	62.09	70.05
1875	31.44	32.65	1897-8	71.46	74.07
1876	31.77	31.60	1898-9	71.62	73.39
1877	32.41	30.37	1899-1900	88.30	73.02
1878	31.45	32.70	1900-01	84.03	85.84
1879	33.41	31.11	1901-2	77.67	82.26
1880	32.52	30.58	1902-3	81.76	84.53
1881	38.74	37.99	1903-4	84.83	84.31
1882-3*	46.12	47.54	1904-5	93.36	85.92
1883-4	37.37	37.16	1905-6	90.93	93.74
1884-5	42.14	38.81	1906-7	96.49	95.21
1885-6	44.74	40.67	1907-8	98.89	1,01.89
1886-7	49.02	41.76	1908-9	1,02.86	1,06.30

* For fifteen months.

The subjoined table shows the debt of the Bombay Municipality and the sums set aside as sinking fund¹ on the 31st March 1909 :—

Particulars of Loans.	Rate of interest.	Loans		Sinking Funds on 31st March 1910.
		Amount of Loans raised.	Balance due on 31st Mar. 1909.	
GOVERNMENT.	Percent		Rs. in thousands (000s omitted.)	
Vehar Water Works Debt	4	25,00	23,52
PUBLIC.				
Drainage Loan of 1878	5	26,94	12,25
The Sanitary Works Loan of 1885-86	5	44,00	37,39
Do. do of 1888	5	7,00	7,00
Tansa Water Works Loan...	5	1,47,00	1,47,00
Drainage and Water Works Loan of 1888	5	12,00	12,00
Miscellaneous Works Loan of 1888-89	5	10,08	10,08
Agripada House Sullage Water Connections Loans of 1889-90	5	2,48	2,48
Sanitary Works Loan of 1890-91	5	35,00	35,00
Municipal Office Building Loan of 1891	5	8,00	8,00
Loan for Fire Brigade-Quarters and Stations	4	4,50	4,50
Loan for repayment of the balance of the 4½ p. e. Govt. Consolidated Loan...	..	4	42,00	42,00
Loan for Drainage and other Works	4	23,25	23,25
Loan for Sewerage and Water Works 1st Instalment	3½	10,00	10,00
Do. do. 2nd Instalment	4	5,75	5,75
Loan for Sewerage and other Sanitary Works	4	25,00	25,00
Loan for Plague purposes	4	20,00	20,00
Loan for Sewerage, Roads and other Sanitary Works	4	19,25	19,25
Loan for certain Sewerage and Water Works	4	21,75	21,75
Loan for certain Water Works	4	12,75	12,75
Loan for certain Sewerage Works	4	24,75	24,75
Loan for the construction of Halalkhores and Bigaris' chals	4	13,50	13,50
Total	5,43,00	5,20,22	85,31

¹ The Sinking Funds have been invested in Government Paper, and Municipal and Improvement Trust debentures. The latter have been lodged with the Bank of Bombay.

The original liability on account of the Vehar debt amounted to 25 lakhs ; but the expenditure on those water works being much in excess of the original estimate, the liability of the Corporation was fixed by Government under section 140 of Bombay Act III of 1872 at Rs. 37,30,053, after taking into account the repayments made by the Corporation from time to time. Repayments made since the settlement of the liability have amounted to Rs. 13,77,614 ; and the balance due to Government on the 31st March 1909 thus stood at Rs. 23,52,439.

Originally when loans were raised it was the practice to pay off a certain proportion of the loan each year. But this practice has yielded place to the policy of providing a sinking-fund for each loan. Under the old practice the drainage loan of 1878, amounting to Rs. 26,94,000, was raised. The sanitary works loan of 1885-86 was of a hybrid character, 6'61 lakhs being paid off at certain stated periods and the balance being covered by a sinking-fund. All subsequent loans are being discharged by means of a sinking-fund. Up to 1905-06 Government required the sinking-funds to be built up on the basis of the accrual of interest at rates analogous to the rates at which the loans were raised. But the gradual lowering of the rates at which interest is paid on gilt-edged securities resulted in Government orders to arrange the sinking-funds of all existing loans on a 3½ p. c. basis and of all future loans on a 3 p. c. basis.

**Assessment
and collec-
tion of Pro-
perty taxes.**

Property taxes comprising a general tax, water tax, halalkhore tax, and a tax on vehicles and animals produce more than three-quarters of the total municipal revenue, and are collected and assessed by the Assessment and Collection department. In 1865, 17,959 properties were assessed, and their rateable valuation was more than 120 lakhs. In 1867 these figures rose respectively to 22,829 and 163 lakhs ; but from that year up to 1880 there was a continual decrease in valuation which at length attracted the notice of the Corporation and led to the reorganization of the department in 1882, in accordance with proposals submitted by the Commissioner, Mr. (now Sir E. C. K.) Ollivant.

Under the Municipal Act the valuations of properties are revised every year according to the rents prevailing in the city. For supervisory purposes the city is divided into 7 wards, each in charge of a Superintendent, and sub-divided again into sections, for each of which a ward clerk is responsible. The ward clerk has to inspect each property once a year, assess all the properties in his section and collect the dues from the persons resident therein. The department is controlled by an Assessor and Collector, aided by assistants, in whose office assessments are maintained, demands settled, bills prepared and issued, collections brought to account and balances struck. All complaints against valuations are investigated by the Assessor and Collector. An appeal lies to the Chief Judge of the Small Cause Court.

The following table shows the number of properties assessed, their gross rateable value and the assessment fixed upon them since 1886-87 :--

Year.	Properties on the Assessment Book.	Gross Rateable Value. (Rupees.)	Demand issued on account of all the taxes including the contributions from Government and Port Trustees.
1886-87	48,470	2,16 27,000	30,72,000
1887-88	49,313	2,27,92,000	31,31,000
1888-89	49,884	2,39,51,000	32,80,000
1889-90	50,425	2,73,64,00	39,10,000
1890-91	50,873	2,82,27,000	41,70,000
1891-92	51,135	2,85,80,000	45,77,000
1892-93	51,314	2,64,03,000	45,96,000
1893-94	51,673	2,69,74,000	42,58,000
1894-95	52,148	2,76,13,000	44,50,000
1895-96	52,499	2,82,56,000	44,41,000
1896-97	52,959	2,89,27,000	45,17,000
1897-98	53,165	2,94,82,000	46,27,000
1898-99	53,328	2,98,53,000	49,17,000
1899-1900	53,592	3,05,17,000	59,99,000
1900-01	53,364	3,13,75,000	59,94,000
1901-02	54,176	3,18,11,000	55,03,000
1902-03	54,633	3,18,91,000	54,02,000
1903-04	55,216	3,44,49,000	58,12,000
1904-05	55,669	3,54,15,000	61,75,000
1905-06	56,044	3,81,90,000	60,41,000
1906-07	56,681	4,14,48,000	63,95,000
1907-08	57,498	4,42,79,000	64,41,000
1908-09	59,317	4,68,75,000	67,74,000

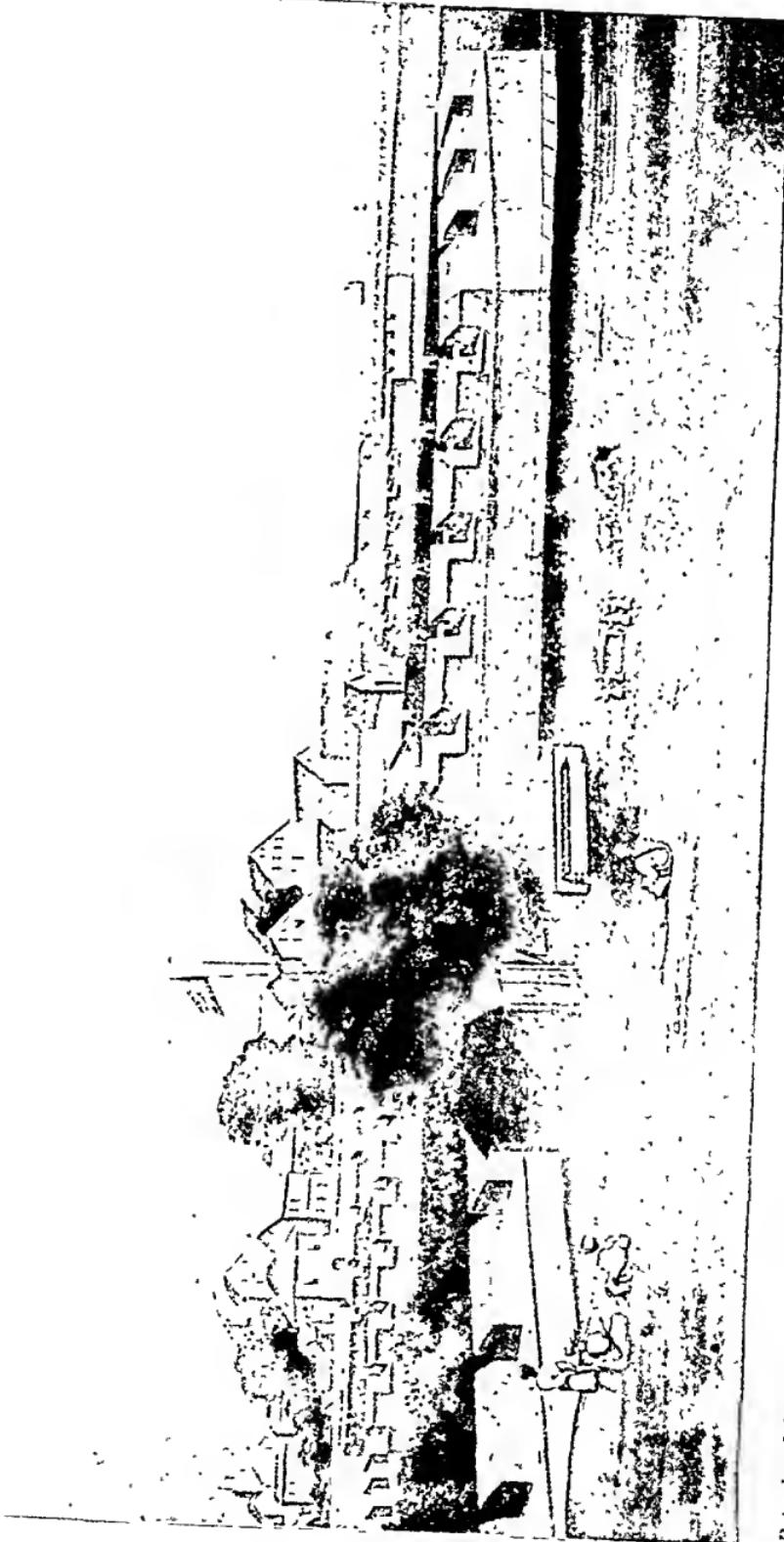
Like most eastern cities Bombay was of old the possessor of many tanks and wells, constructed by pious citizens for the public good, the water of which was used by the inhabitants both for washing their clothes, household utensils and bodies, and also for drinking.² The wells were of an average depth of 30 feet; and like the tanks were mostly situated in crowded localities and thus peculiarly liable to pollution. The location of a private well within the house was regarded as a special luxury to be enjoyed only by the rich; and many houses in the Fort were supplied in this way with water which percolated from the foul ditch surrounding the ramparts. In fact, up to 1860, the conditions of an impure water-supply were abundantly fulfilled by insanitary surroundings, and natural facilities afforded to the drainage of organic impurities into the wells left little room for doubt that liquid sewage formed no insignificant constituent of much of the drinking water.³

Nevertheless it was rather the scarcity than the impurity of the water-supply that underlay the efforts to improve it. In 1850, for example, the only water to be found on Malabar and Cumballa hills was situated at Walkeshwär village on the one side and at Tankerville (Gowalia Tank road) on the other, and the total quantity obtainable throughout the island cannot have been much more than one-tenth of the amount now used by the public. Water-famines were by no means uncommon, one of the largest occurring in 1824 and resulting in a public enquiry into the condition of the wells and tanks. But no definite steps towards improvement were taken until 1845, when the deficiency of

¹ For more detailed information see Major Tulloch's Water Supply of Bombay (1872). Michael's History of the Municipal Corporation (1902), Clerk, Sadaseewjee & Jacob on Impounding Reservoirs in India (1894); Santo Crimp's Report on Bombay Water Supply, 1899.

² A good example of such tanks was Framji Cowasji tank, bordering the Esplanade, which was built in 1831 by an enterprising Parsi for the benefit of residents in the locality. Another was the big tank constructed in 1849 near the Grant Medical College, into which several springs of salt water gushed from the Byculla side. These springs increased and decreased with the spring and neap-tides. (Bombay Times, June 6th, 1849). Others were the Two Tanks in Duncan road, built before 1823, and supplied with water by an aqueduct from the Cowasji Patel tank.

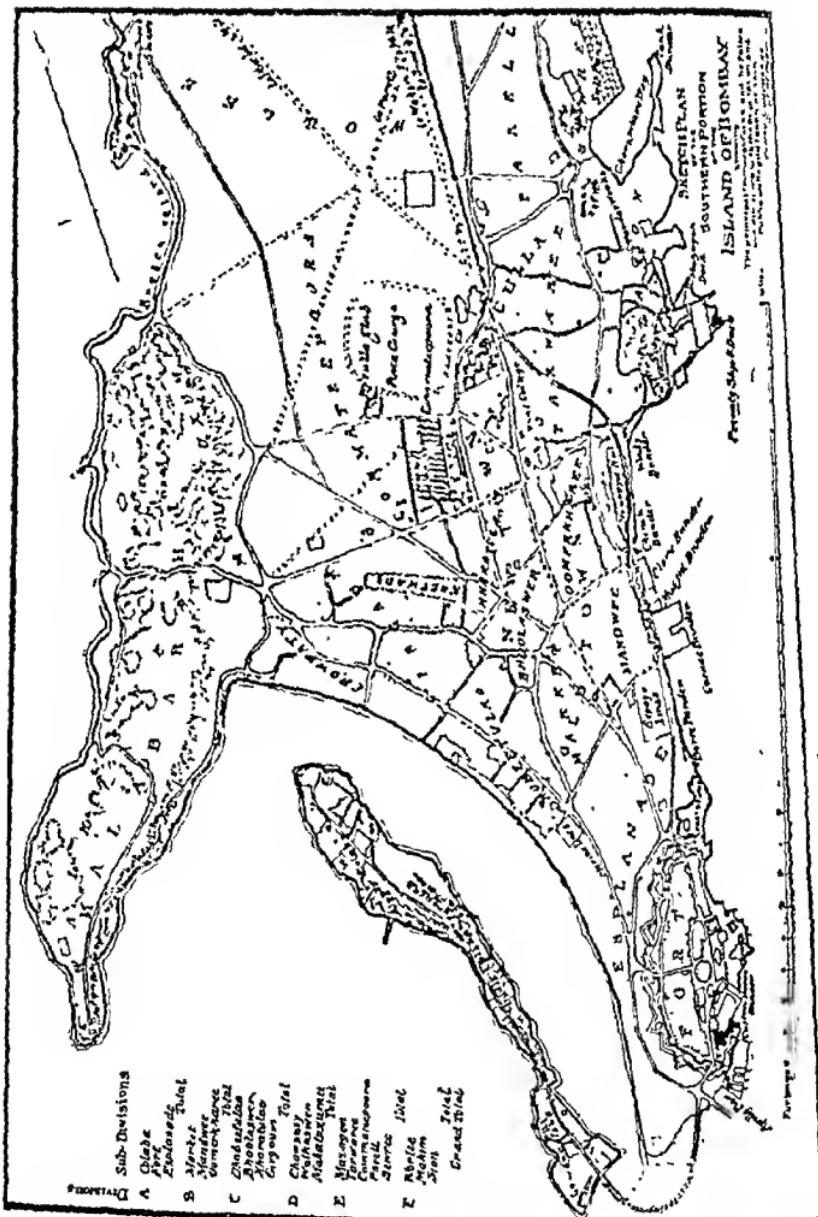
³ Tulloch's Water Supply of Bombay (1872), pp. 209-10.



Reproduced from Grindlay's Indian Scenery.

VIEW OF BOMBAY FORT. 1811.

The plate represents the north-west extremity of the Fort, with embrasures commanding the approach from the north of the Island.



water in the town forced Government to appoint a committee, composed of Dr. Graham and Dr. Leith, to devise measures for enhancing the supply. Various proposals were put forward, among them being that of Mr. L. C. C. Rivett for impounding the surface drainage of the Neat's Tongue (Trombay), which according to his calculations would have provided the town with 200,000,000 gallons a year at a cost of some 7 lakhs. Colonel George Jervis, on the other hand, believed in the construction of three reservoirs at Dhobi Talao, Girgaum and Mahim, the first of which was to supply the Fort, the second the town proper, and the third Parel, Byculla and Mazagon, the water being pumped from them by steam-power and distributed through pipes to those areas.¹ This proposal, however, lost weight from the fact that the existing tanks were often extremely low and had occasionally to be replenished by the sinking of new wells. The old Cowasji Patel tank, for example, was very short of water in 1846; and the situation was only saved by Mr. Framji Cowasji, who purchased the Mugbhat oart and sank three large wells in it, from which the tank was supplied by means of steam-machinery at an outlay of Rs. 30,000.² A third proposal by Captain Turner to impound water on Malabar hill and Cumballa hill was likewise rejected.

The project finally adopted was the outcome of a report, submitted by Captain Crawford of the Engineers in 1850, in favour of drawing the city's water-supply from the Vehar *nala*. In 1852 Mr. Conybeare was asked to scrutinise the proposals of his predecessor and by 1855 he had elaborated the great scheme for the construction of the Vehar lake, in conjunction with a minor scheme for the distribution of water by iron pipes to nearly all parts of the city. Outlying villages were to be supplied by means of draw-wells kept constantly full by masonry conduits connected directly with the main pipe. The scheme was formulated by no means too soon; for in 1854 so terrible a water-famine occurred that the Great Indian Peninsula

¹ Tulloch's Water-Supply of Bombay (1872).

² Michael's History of the Municipal Corporation, pp. 68, 69. Mr. Framji Cowasji obtained the Powai Estate as freehold from Government in 1837 on condition of always keeping the Two Tanks supplied with a reasonable quantity of water.

railway and country-boats had to be used for the daily transmission of water from the mainland into the town.¹ Nevertheless a certain amount of trouble was experienced in raising the necessary funds, so that the lake and its ancillary works were not completed till 1858.² Water was introduced in the year following, the daily supply amounting to roughly 9½ million gallons. This supply proved within a few years wholly insufficient for the needs of a population, which from the commencement of the cotton-boom and share-mania was annually increasing by abnormal strides; and in 1866 therefore meters were introduced and applied to about 3 p. c. of the total supply, including all Government, factory and public company connections. By 1868 an enhanced supply had become an imperative need; and on the motion of Dr. Blaney, the Municipal Commissioner was desired to submit proposals for the extension of the supply. Four separate schemes, the Shewla, Kennery, Tulsi and Powai, formed the subject of this report; and of these the Tulsi scheme, which consisted in damming the river Tasso and diverting its waters into the Vehar lake, ultimately found favour with Mr. A. R. Scoble's commission, which was appointed by Government in 1869 to discuss the four alternative projects. Plans and estimates were prepared in 1870; the works were commenced in 1872 and completed in 1879, together with a settling tank and covered service reservoir on Malabar Hill, which are connected with the Tulsi lake by a 24-inch main.³ The additional supply thus obtained amounted to about 4½ million gallons a day. The John

¹ The author of the Marathi *Mumbaiche Varnan* gives a graphic description of the shifts resorted to by the people in this crisis. Prayers and offerings to the gods were made daily; an image of one of the sages was made, consecrated and worshipped for eight consecutive days; all cattle were removed from the city to Mahim; and a single jar of muddy water was in most cases all that the poorer families had to depend on for several days.

² The ceremony of turning the first sod of the new works was performed by the Governor-General on January 11th, 1856, in the presence of Lord Elphinstone and a large gathering of Bombay residents. *Bombay Times*, 2nd February 1856.

³ The water from the Tulsi catchment-area was actually diverted into Vehar from 1874 onwards, before the completion of the Tulsi works. This saved the city from a serious failure of supply in 1876 and 1877. *Administration Report of the Municipal Commissioner for 1877.*

Hay Grant or Bhandarwada reservoir with six filter beds for Vehar water was also commenced in Mazagon on the 10th May 1880 and the water from Vehar lake was diverted into the reservoir on the 7th April 1884.

Still the city continued to increase rapidly in size, and by 1884 the yield of Tulsi and Vehar together, amounting to roughly 14 million gallons a day, proved insufficient for even the domestic needs of the population, apart from the increased demand from the city's trades and industries. Consequently, after initiation of investigations by Dr. Blaney, the Municipal Corporation sanctioned the execution of the Tansa water works project, originally devised by Major Tulloch, and applied to Government for the loan of the services of Mr. Clerke, an official of the Public Works Department, to carry out the work. Plans and estimates were prepared in 1885; the contract for the construction of the masonry-dam was signed and the work was commenced in January 1886; and on the 31st March 1892, the completed works were opened by the Viceroy, Lord Lansdowne. In 1889, during the period of construction, the probability of a water-famine appeared so imminent that the Corporation sanctioned the Powai valley scheme as an auxiliary to Vehar. This consisted of the construction of a masonry-dam to secure the water flowing from 1,700 acres, forming part of the old Powai estate and situated immediately to the south-east of Vehar lake. The lake or emergency reservoir thus formed in 1891 was far too shallow to admit of good water for domestic purposes being obtained and also at too low a level to permit of proper gravitation into the city; and, on the completion of the Tansa works in 1892, it was therefore abandoned and has never since been utilized. The daily supply that can be stored in the Tansa lake, as at present constructed, is estimated at 40 million gallons.

At the present time (1909), the three lakes, Tansa, Vehar and Tulsi have a total storage capacity of about 30,000 million gallons above the lowest outlets, and with a regularly recurring monsoon, there is little prospect of a total failure of the supply. To provide for the growing needs of the city, the Tansa dam has been so designed as to admit of its being raised 15 feet in height, which will then

provide an additional storage of about 12,600 million gallons. The quality of water is generally good, that received from Tansa being considered fit for potation without further purification. The supplies from the various sources are periodically analysed and every care is taken to maintain an abundant supply of uncontaminated water. The following is a brief result of an analysis made during the month of May 1907, when the water level in the lakes was low :—

Lake from which sample was taken.	Grains per gallon.		Part per million.	
	Total Solids.	Chlorine.	Free Ammonia.	Albuminoid Ammonia
Tansa ...	7.0	.6	Nil.	'13
Vehar ...	9.0	.9	Nil.	'22.
Tulsi ...	9.0	.9	Nil.	'20

The average daily supply drawn off from the lakes, exclusive of that lost by evaporation, amounts to about 32 million gallons, i.e., 17½ millions from Tansa, 11½ millions from Vehar and 3½ millions from Tulsi. Out of these 32 million gallons about 4 million gallons are used for railways, Port Trust, cattle stables, and trade purposes; half a million gallons are supplied to the suburbs and the remainder is used for domestic purposes, including the flushing of drains, water-closets, and wastage. It is estimated that about ¾ million gallons are used for road watering. The Fort, with a population of about 100,000, consumes 4 million gallons daily, or about 40 gallons per head, leaving 28 million gallons for distribution amongst the remaining 900,000 odd inhabitants.

The present supply mains from the lakes to the city vary from 24" to 48" diameter, while the distributing and service mains laid within the city range from 3" to 48" diameter.

House service connections for domestic purposes are granted to all private consumers, and vary from ½" to 3" in diameter. Connections to mills, factories, and other industrial concerns vary from 2" to 6" diameter. There are about 22,000 connections now in existence. Hydrants for fire-extinguishing and road-watering pur-

poses are provided in all parts of the city ; there are about 3,400 hydrants now in use.

The following table shows the sizes and lengths of the principal mains now in use :—

	Inches.									Total.
	48"	32"	26"	22" and 24"	19" to 21"	16" to 18"	13" to 15"	11" to 13"	8" to 10"	
Supply mains outside the city ... Miles	24	7	...	18½	...	...	...	...	...	49½
Supply mains within the city ... Miles	3½	13	3	11	2	2½	...	...	...	34½
Distributing and ser- vice mains, within the city ... Miles	1	2½	2½	4½	2	5	4	117	139	

All the water used for Government, railways, Port Trust, and trade purposes and part of the domestic supply is now metered. There are about 3,000 meters of various sizes ranging from " to 6" in diameter in use at present time.

The principal water-works inside the island are the reservoirs and filters on Malabar hill and Bhandarwada hill. The former comprise a clear-water reservoir, settling reservoir, and 7 filter beds with a combined area of nearly 9,000 square yards, which practically filter the whole daily supply from Tulsi. The latter works likewise comprise settling and clear-water reservoirs and 9 filter-beds with a combined area of 15,560 square yards and a filtering capacity of 7½ million gallons a day. The reservoirs on Malabar and Bhandarwada hills have storage capacities respectively of 20 million and 12 million gallons. The filters in both cases are constructed of a 24-inch layer of sand, resting upon a 6-inch layer of gravel ; and below the gravel are built brick channels which carry the filtered water away into clear water channels and thence through regulating and measuring sluices into the distributing reservoir. The rate of filtration of Bombay water is calculated at nearly 600 gallons per square yard per diem, which is equivalent to a lineal velocity of flow of about 5 inches per hour.

Public drinking-fountains, stand-pipes and cattle-troughs have been provided in all parts of the city; these are taking the place of the old wells and tanks which are now almost entirely abandoned and are being gradually reclaimed. The public drinking-fountains and stand-pipes, now in existence, number about 150 and cattle-troughs about 60.

The total amount expended on all water-works up to the present time is about 282 lakhs, nearly the whole of which has been met from various loans raised from time to time. The present financial position of the water works scheme is—liabilities 255 lakhs and assets 329 lakhs. Thus the assets, including value of works, is 74 lakhs in excess of liabilities.

Among the most serious accidents occurring since 1892, resulting in the temporary stoppage of the supply from different sources, may be mentioned the bursting of the 42" Vehar outlet main within the Vehar outlet tunnel. This accident occurred on the 30th August 1893, and necessitated the closing of the Vehar supply for about 7 days. In 1892 a land slip occurred at Gibbs' road which carried away a portion of the 24" Tulsi main, and the supply from this source was stopped for about a week. A similar accident occurred in 1907, but caused no serious interference, as Tansa water was supplied to the city and reservoirs through the existing distributing mains. On the 30th July, 1896, about three miles of the 48" Tansa main settled owing to heavy floods and about 500 feet of piping were entirely washed away. This accident caused a stoppage of the Tansa supply for about 20 days. A portion of the Tansa aqueduct, opposite the Vehar lake, collapsed on the 20th February 1901 and stopped the Tansa supply to the city for 10 days. Owing to the prevailing hot weather, much inconvenience was felt by the stoppage of this supply. A similar accident to the Tansa duct occurred at Pogaon near Bhiwandi in November 1901, but being the cold season, less inconvenience was felt. The supply on this occasion was stopped for about five days. In September 1904, a portion of the Tulsi tunnel, under the dam, fell in and caused damage to the cast-iron pipes laid therein. This accident caused

the supply from the Tulsi lake to be curtailed for a considerable length of time.

Since the completion of the Tansa works in 1892, water has been regularly supplied from the lakes which are amply replenished after each monsoon. There has been no occasion for the inhabitants of the city to return to the use of water from the old wells; but, owing to the increasing demands for water for trade and other purposes, it is considered necessary to further augment the supply by duplicating the line of 48" pipes. These proposals are now under discussion.

The Tansa lake is situated at the foot of the Western Ghats, about 55 miles from Bombay, and has a drainage-area of $52\frac{1}{2}$ square miles. Its area, when full, is $5\frac{1}{2}$ square miles, with a capacity of about 18,600 million gallons, which after due allowance for evaporation and other losses, suffices for a daily supply of upwards of 40 million gallons. The masonry-dam, which is 8,800 feet in length and 118 feet in height at the highest point, is so designed that it can, if necessary, be raised 15 feet higher, thereby increasing the storage capacity to more than 30,000 million gallons, and the daily supply to 70 million gallons: but this would involve the construction of a second aqueduct along a far less practicable route than that of the existing aqueduct.

The heaviest rainfall recorded at Tansa was 120 inches in 1896 and the lightest 40 inches in 1899, the mean average fall being 108 inches: but so immense is the catchment-area that a fall of less than 40 inches suffices to fill the lake. The surplus waters pass away over a portion of the dam to the south, which is 1,650 feet long and 3 feet lower than the remainder, and thence by depressions in the ground into the old course of the river. These *nallas* or depressions at the back of the dam have acquired a depth of 20 to 30 feet. Levels are taken after the close of each succeeding monsoon, a comparison of which for several years shows that denudation is not advancing to any appreciable extent. The heaviest flood on record occurred on the 20th July 1894 and amounted at its maximum volume to 2,500 million cubic feet per second.

Tansa Works.¹

¹ See Minutes of Proceedings of the Institution of Civil Engineers, 21st November, 1893.

Water is drawn from the lake by means of four sluices at different levels, the lowest, being 380 feet above the Town Hall datum or about 280 feet above street-level in the Fort, and is always tapped as near the surface of the lake as possible, to ensure the maximum of purity. The conduit which commences at the level of the lowest sluice consists of a masonry channel, 7 feet wide and 6 feet deep, with an arched roof, and is furnished with manholes at about every furlong and cleansing sluices at every two furlongs. It has a downward gradient of 6 inches in the mile, and when full is capable of discharging 40 million gallons a day. The seven valleys on its course, which vary in length from three-quarters of a mile to $1\frac{1}{2}$ miles, are crossed by 48-inch cast-iron pipe syphons, with a fall from end to end of 1 in 1,650 and a consequent discharge of about 18 million gallons. Up to the present date a single line of piping only has been laid, so that the full capacity of the aqueduct still remains to be utilized. The longest syphon-line, which crosses the Bassein creek and the low-lying land on either side, is more than 11 miles long, and for roughly half-a-mile is carried on iron bridges over the three branches of the creek. In all there are about 27 miles of masonry conduit and tunnel, including several long masonry aqueducts and 17 miles of syphon between Tansa and Ghatkopar, the latter point being furnished with a screening and measuring basin, in which can be estimated the quantity of water passing into the 48-inch main running from Ghatkopar to Chinchpugli. At Chinchpugli the 48" main is reduced to 27" and runs as far as Nana's chowk at Gowalia tank, thence it supplies Malabar hill and Bhandarwada reservoirs and the city direct, through the existing distributing mains. The total cost of the Tansa water works was 149 $\frac{1}{2}$ lakhs.

The Vehar lake in Salsette has a drainage area of about 3,900 acres, of which 1,400 are covered by the lake itself, and when full contains about 8,800 million gallons of water. The ratio of the catchment area to the storage area is far smaller than at Tansa. The effects of a poor monsoon are far more lasting than in the case of the larger work, and only a succession of good monsoons can operate

to maintain the water at overflow-level.¹ The lake possesses three earthen embankments, the large one measuring 84 feet in height and two of smaller dimensions, which were somewhat carelessly constructed in the first instance, and had to be repaired and strengthened at considerable cost about 1871. As originally constructed, the water was drawn off at an upstand tower connecting with a pipe through the main embankment, but justifiable fears being entertained of the safety of this device, it was finally abandoned in favour of an upstand tower at the upper extremity of the dam with regulating sluices to carry the flow into a 42-inch pipe, laid in a tunnel driven through the hill on the east side of the embankment. At the lower end of this tunnel the pipe bifurcates into one of 32 inches² and one of 24 inches in diameter, of which the former, supplying 7½ million gallons a day, joins the Great Indian Peninsula railway at Kurla and runs thence to the Bhandarwada reservoir and filters; and the latter, supplying 3 to 4 million gallons a day, runs directly to the Vehar filters and thence via Kurla to old Government House, Parel, with a branch to Mahim, Bandora and the northern portion of the island. At the end of the embankment and to the north of the outlet is a waste weir, 603½ feet long, which is capable of disposing of the largest flood likely to occur and thereby preventing the danger consequent upon the escape of water over the top of the earthen-dam. The total cost of the Vehar water-works was more than 45·4 lakhs.

The Tulsi lake in Salsette, which is the smallest of the three main sources of supply, is situated amid the most charming scenery and lies 52 feet higher than Tansa and nearly 200 feet higher than Vehar. On this account it is able to furnish with water places like Malabar hill and Cumballa hill which cannot be reached by the Vehar supply. But the quality of its water on the other hand is distinctly inferior to that of the other two lakes, owing partly to its size, which is too small to allow of free sedimentation,

Tulsi Works.

¹ Lecture on the Water-Supply of Bombay by Mr. Fairlie Bruce, Times of India, 1901. It is there recorded that, owing to the deficient rainfall (38 inches) of 1899, the lake was short by 2,000 million gallons in 1900.

² This main is now being diverted between Kurla and Byculla and that portion of the main between Vehar and Kurla will shortly be replaced by a 48" diameter main.

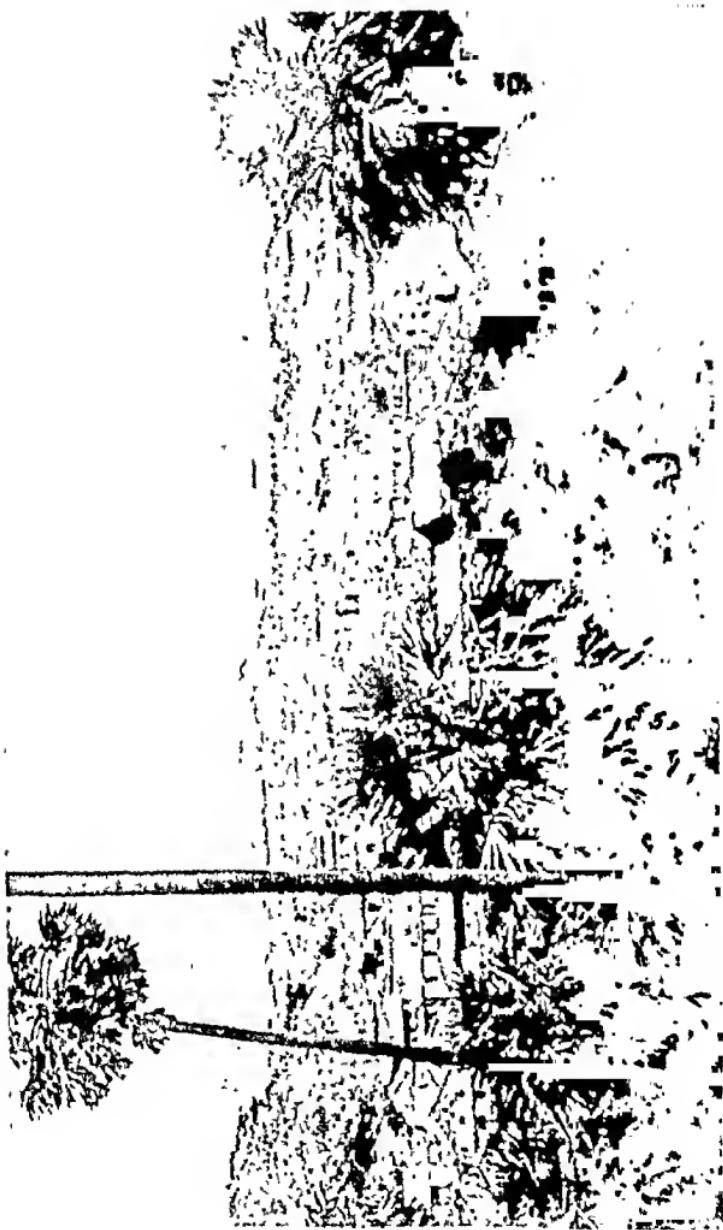
partly to the absence of algae-absorbing weeds, and partly also to the fact that the prevailing winds blow towards the outlet instead of in the contrary direction, as at Tansa and Vehar. The lake, which covers 320 acres out of a total catchment area of 1,714 acres, is formed by a masonry dam, 85 feet in height, across the original course of the Tulsi *nala* and an earthen dam of less elevation on the Vehar side. A waste weir, measuring 132 feet in length, carries the overflow of water into the Vehar lake.

The average rainfall at Tulsi is 104 inches, measured as at Tansa and Vehar near the embankment. As much of the catchment-area of all three lakes is at a far higher level than that occupied by the gauges, it seems probable that the latter do not indicate the total rainfall. The highest recorded fall at Tulsi was 143 inches in 1892, and the lowest 44 inches in 1899. Water is drawn from the lake at different levels into an upstand tower and passes into an iron pipe laid through a tunnel under the embankment; this tunnel collapsed several years ago, without however causing any damage to the earthen embankment. The water is conveyed to Malabar hill by means of a 2½-inch pipe, which, passing Marole about 1½ miles from Andheri and Bandora, skirts the west side of the Bombay, Baroda and Central India railway line as far as the race-course, and thence runs up by the Pedder and Gibbs roads to the reservoir. The pipe supplies about 3½ million gallons a day. The total cost of the Tulsi works was 37·6 lakhs.

Drainage.

No problem in the municipal administration of the island has presented greater difficulties or been more fully discussed from time to time than that of drainage, in consequence of the fact that the bulk of the island was originally below the mean level of the sea, thereby rendering gravitation into the latter impossible, and considerably enhancing the cost of drainage-operations; and also because at the present date, after a large portion of the interior has been filled up and reclaimed, the elevation of the land is too slight to admit of gravitation into the sea at a distant point of outfall. The history of the drainage of Bombay commences with the old main drain, constructed about the end of the eighteenth century, which, at first merely an open *nala* discharging at the Great Breach, was

VIEW OF NORTHERN PART OF BOMBAY



gradually covered in between 1824 and 1856 from the Esplanade to Paidhoni and Bellasis road and was furnished, after the construction of the Hornby Vellard, with a fresh outfall at Varli. As the urban area increased, an outfall nearer the town and a more constant delivery of sewage into the sea became essential; and in 1842 therefore sluices were constructed at Love Grove and connected with the upper part of the channel by a new cut, the junction of the two forming the present bend in the main drain. In the meanwhile subsidiary connections with the main drain had sprung into existence, so that by 1856 there were altogether 8,201 yards of subsidiary drains, 1,268 yards of drains communicating directly with an outfall into the harbour, and 2,634 yards of drains falling into Back Bay. The system was thoroughly unsatisfactory, inasmuch as the bottom of the main drain was below the level of the low-water spring-tides, and both sewage and storm-water were therefore constantly ponded up until they overflowed the Flats and rendered residence over a large area a complete impossibility.

Prior to 1860 various attempts were made to rectify the nuisance, as for example in 1853 by Mr. Conybeare, who initiated a scheme for running all sewage during the fair season into a sunk pit near Bellasis road, deodorizing it and then applying it to the irrigation of land near the Flats. This, as well as other schemes, only served to accentuate the nuisance; and no comprehensive proposals were formulated until 1860, when Messrs. Wilcox and Tracey submitted plans for the discharge of all sewage at Wari bandar and Carnac bandar on the east of the island, and for the separate drainage of the Fort area, the Malabar hill area being omitted as not ripe for drainage-operations. The total cost of the scheme was estimated at 33·2 Lakhs. The scheme, having been approved by a local committee under the chairmanship of Dr. Leith and by an expert in England, was sanctioned by Government in 1863; a drainage department was organized, and work was commenced in 1864. The work however came to an abrupt conclusion in the following year, partly owing to the failure of the contractors, and partly because in the meanwhile the proposed location of the outfall had been

seriously combated in the public press. Eventually in 1866 Government, in deference to public opinion, appointed a commission to report upon the whole subject and sanctioned the proposal, which it submitted, to discharge all sewage into a reservoir opposite the old light-house at Colaba and thence pump it into the sea at ebb-tide. By the close of 1867 the outlet into the harbour had been provided, and a main-sewer costing 1·3 lakhs with an outfall at Sonapur in Black Bay had been completed.

A definite plan of operations, acceptable to all, was however still a desideratum; and the history of the decade 1867-77, is one of delay and of destructive rather than constructive energy. In 1868 for example Captain Tulloch, who had been despatched for the purpose from England, submitted a report opposing the sewage outfall at Colaba, and proposing to pump the sewage at Love Grove. He further favoured the construction of three sluices at Love Grove, Vartli, and Dharavi for dealing with storm water. This scheme was rejected in 1869 by another commission, presided over by Mr. A. R. Scoble, so that in 1872 the several outfalls at Love Grove, Colaba, and Black Bay had all been condemned, and the Municipal authorities had no definite plan upon which to proceed. Meanwhile the drainage of Kamathipura and other areas had been completed, pending a final decision on the location of the outfall; and in view of this fact and of the pressing requests of Government to apply themselves seriously to the problem, the Municipality in 1877 decided to adopt an alternative scheme, contemplating an outfall at Love Grove, which had been prepared by Captain Tulloch in 1872 and modified by Mr. Renzi Walton, their Engineer, in 1876. A loan of 27 lakhs was raised and work on the scheme was commenced in 1878, the chief features of the scheme being the construction of a new main sewer from Caruac bandar to Love Grove at an estimated cost of 4·9 lakhs, which was completed with its ancillary works in 1881, of a new outfall sewer estimated to cost 2·41 lakhs and completed in 1880, of pipe-sewers completed in 1882-84 at a cost of 3·71 lakhs, and of a pumping-station and plant at Love Grove, which were erected in 1884 at a cost of Rs. 95,000, exclusive

of machinery costing 1·86 lakhs. This pumping-plant was eventually condemned by Mr. Baldwin Latham in 1890, and a new plant and engine were purchased in 1893·94 at a cost of 4·88 lakhs, including the cost of building.

From 1882 onwards the work on this scheme has steadily progressed. Branch sewers were laid down, notably the Queen's road sewer, completed in 1884 at a cost of 1·41 lakhs; the Fort area was re-sewered by the close of 1889 at a cost of 3·98 lakhs; house-connections and pipe-sewers were completed in Girgaum in 1891 at a cost of 7·95 lakhs; and in 1884 depôts were erected for the reception of night-soil which was discharged into new sewers and carried out to Varli. This system still prevails over the greater portion of the island. In 1890 Mr. Baldwin Latham was asked to advise the municipal authorities upon the general scheme of drainage for the island; and, in view of the expense attendant upon the location of the main outfall at the Prongs Reef, which he strongly favoured, he decided that the existing outfall at Love Grove was the most suitable. As a result of his report Colaba was sewer-ed on the Shone system in 1893.

Since 1890 the drainage department of the Municipality has been engaged in gradually completing the details of the original scheme, such as the sewerage of Mazagon, Malabar hill, Parel, and other parts of the island. At the present date (1909) the city contains about 200 miles of underground storm-water drains and about 116 miles of sewers. Since 1897 the districts of Mazagon, Parel, Chinchpugli and Agripada have been sewer-ed on the Shone system at a cost of 13·24 lakhs, an air-compressor station having been constructed at Love Grove for all these districts at a cost of 8·78 lakhs, inclusive of the cost of the principal air main from the station to these districts. Malabar hill has recently been sewer-ed at a cost of about 6½ lakhs, a portion of the sewage being dealt with by biological treatment. The effluent is discharged into the sea on the west of Malabar hill. For the disposal of storm water a new channel from Jacob's Circle to Varli has been completed, as also a branch channel up to Dadar road. These works have cost about 15 lakhs. Branch

drains from Jacob's Circle have been completed at a cost of $2\frac{1}{2}$ lakhs. The Varli channel was designed on lines recommended by Mr. Santo Crimp, who visited Bombay in 1899, to advise the Corporation on the general drainage of the island. Important drainage-works carried out since 1867 are shewn in Appendix IV at the end of this chapter. More than 200 public latrines and urinals are at present (1909) maintained by the Municipality, and are being added to yearly as necessity arises. The majority of these are on the water-carriage system.

It is proposed to carry out the following works during the next few years at an estimated cost of 50 lakhs. The sewerage of the Elphinstone reclamation on the Shone system ; the drainage of high lands discharging into the harbour at Tank bandar ; and the erection of new pumps at Love Grove and other works necessary for relieving the present surcharging of sewers. As regards the last item the Corporation have decided on the advice of Messrs. G. Midgley Taylor and G. R. Strachan to instal an entirely new pumping-station at Love Grove to deal with the whole of the city's sewage, the existing pumps being kept in reserve in order to deal with the increased flow during the heavy rains of the monsoon. The present plant has proved inadequate to deal with the maximum quantity of sewage reaching Love Grove, which has resulted in the sewers periodically becoming seriously surcharged.

There is no separate tax or cess to defray the cost of the drainage works constructed in Bombay. The general tax on properties amounting to not less than 8 per cent. and not more than 12 per cent. covers the cost of these works in addition to other works carried out by the Municipality. A *halalkhore* tax not exceeding 3 per cent. on properties is also levied, which covers the cost of maintaining and repairing municipal drains and of scavenging. Since 1878 the Municipality has spent about 125 lakhs on drainage works.

Up to 1906 the Drainage department of the Municipality was divided into two branches, a special branch for the construction of new works and an ordinary branch for the maintenance of existing works and the supervision of

house-connections. These branches have since 1907 been amalgamated under a qualified Deputy Executive Engineer for drainage, who is assisted by a full staff comprising two Assistant Engineers, a Chief Inspector, several inspectors, a head plumber, a head surveyor and a full clerical establishment.

The License department was formerly managed by the Health department, but in 1890 a separate department was formed with a staff of inspectors and clerks under the control of a Superintendent of Licenses, to whom power was delegated by the Municipal Commissioner under the provisions of Section 394 of the Municipal Act, 1888, to issue licenses, subject to certain conditions and restrictions, which are enumerated in the license forms in respect of dangerous and offensive trades. The city is divided into seven wards A to G, and each ward is in charge of an inspector. The work of tabulating the wards for the purpose of controlling premises subject to license is commenced on 1st April of each year, and ends on 31st March following.

Licence Department.

The provisions of Act II of 1895 materially differ from those of 1872, 1878 and 1888. Section 67 of Act II of 1895 authorized a license tax on professions, trades or callings, which were divided into four classes. The Municipal Commissioner was authorized to determine under which of these classes every person should be licensed and to assess them accordingly. Any person aggrieved had the right to appeal to the Court of Petty Sessions, which heard and determined such appeal and had power to award compensation to the appellant or to the Municipal Commissioner as was thought fit. Any person required to take out a license or to renew the same who failed to do so, was liable, on conviction, to a penalty not exceeding three times the amount which in the judgment of such Magistrate would have been payable by such person; and if any person, without reasonable excuse, neglected or refused to produce and show his license when demanded, was liable, on conviction, to a penalty not exceeding one hundred rupees. In 1897 the revenue from this source was Rs. 2,000,000, and the number of licenses issued was 6,043. In his annual report of 1898 the Municipal Commissioner

commenting on the levy of this tax says :—“ This most objectionable tax has happily been abolished, and a better form of taxation introduced for the current year ”.

The Municipal Act of 1872 and 1878 provided for the licensing of dangerous and offensive trades almost in the same manner as the Act of 1888 which enacts that no person is authorized to use any premises for any of the purposes hereinbelow mentioned without or otherwise than in conformity with the terms of a license so granted, *vis* :—(a) Any purpose which is in the opinion of the Commissioner dangerous to life, health or property, or likely to create a nuisance. (b) Keeping horses, cattle or other four-footed animals for sale, on hire or for sale of the produce thereof; (c) Storing for other than domestic use or selling timber, firewood, charcoal, coal, coke, ashes, hay, grass or any other combustible things; (d) Casting metals; (e) Manufacturing bricks or tiles; (f) Packing, pressing, cleansing, preparing or manufacturing, by any process whatever, any of the following articles, *vis* :—(1) Cloths in indigo or other colours; (2) Paper; (3) Silk; (4) Pottery; (g) Storing, packing, pressing, cleansing, preparing or manufacturing, by any process whatever, certain specified articles.¹

The following statement gives the total number of licenses issued, and the gross revenue since 1890-91 :—

Year	Number.	Revenue.		Year,	Number.	Revenue.
						Rs.
1890-91	...	3,235	36,417	1900-01	...	5,912
1891-92	...	4,110	46,383	1901-02	...	6,154
1892-93	...	4,833	54,990	1902-03	...	6,538
1893-94	...	5,407	60,507	1903-04	...	6,474
1894-95	...	5,701	63,914	1904-05	...	6,570
1895-96	...	5,880	65,048	1905-06	...	6,545
1896-97	...	5,730	56,462	1906-07	...	6,639
1897-98	...	5,750	53,741	1907-08	...	6,991
1898-99	...	5,583	60,646	1908-09	...	83,347
1899-1900	...	5,831	63,732			84,646

¹ The articles are blood, bones, candles, catgut, chemical preparations, china grass, cocoanut fibre, cotton or cotton refuse and seed, dammer, dynamite, fat, fins, fish, fireworks, flax, fulminate of mercury, gas, gun cotton, gunpowder or blasting powder, hemp, hides, horns, hoofs, hair, jute, kerosine oil, lime, matches for lighting, manure, meat, nitro-glycerine, oil, oilcloth, ossifat, petroleum oil, paraffin oil, rags, resin, Rangoon or Burma oil, soap, sulphur, saltpetre, spirits, skins, tallow, tar or pitch, tow, turpentine and wool.

The demand for the retail sale of kerosine oil is so great that no less than 1309 licenses were issued during the year 1908-09. 1050 places were licensed for sale or storage of timber; 487 places for sale or storage of firewood; 305 places for sale or storage of charcoal; 568 places for sale or storage of matches. Besides these, there are 18 soap factories, 18 silk dyers, 33 sugar refineries, one paper manufactory, 22 lime-kilns, 4 candle manufactories, 185 indigo and other dye-works, and 20 potteries. In all 7163 licenses were issued in 1908-9. Under the Poisons Act of 1866, the Municipal Commissioner was authorised to issue licenses in this respect. But in 1909 the responsibility of the licensing for possession and sale of poisons was by a Government Notification vested in the Commissioner of Police. The conditions and restrictions of these licenses are contained in rules issued by Government under section 2 of the Poisons Act I of 1904. The poisons enumerated in this Act are neonite (*bachnug*), *dhatura*, henbane (*khorasani ajwan*), nux-vomica, (*kuchla and kajru*), Saint Ignatius' bean (*Papita*), Calabar bean, white arsenic (*Somal*), red arsenic (*Mansil*), yellow arsenic (*Hartal*), Sehelle's green (arsenite of copper), Schweinfurth green (aceto-arsenite of copper, *Hirwu*), corrosive sublimate (*raskapur*).

The precise date of the constitution of a fire-brigade for FireBrigade. Bombay cannot be definitely stated; but the fact that in 1777 Colonel Lee was allowed Rs. 4 a day "for his trouble in superintending the fire-engines"¹ shows that arrangements of some kind were in existence at that date. Judging however by the great havoc and loss caused by the fire of 1803, these arrangements cannot have been very complete. During the greater portion of the nineteenth century the fire-brigade was administered by the Commissioner of Police, the officers and men being members of the ordinary police force; but whereas the European members of the brigade performed police-duty as well as fire-duties, the native portion of the staff was restricted to the work of the brigade only. The chief equipment of the brigade consisted of seven hand-engines, of which the first was purchased in 1840 and the last three were pur-

¹ Forrest's Selections. Home Series II, 192.

chased in 1884.¹ In 1859 Government made an attempt to shelve the burden and cost of maintenance of the brigade on to the shoulders of the Municipal Commissioners, but were met by a refusal based upon the terms of Act XXV of 1858: and in 1864 they appointed a commission to enquire into the condition and working of the brigade, which eventually reported that the brigade was under-equipped and under-manned.² It was probably in consequence of this report that in 1865 the Bench of Justices, who had by this date become responsible for the cost of the brigade, despatched Mr. Edginton to England to qualify himself for the post of captain of a new steam fire-brigade, and that they appointed Major Henderson, ex-Commissioner of Police, to reorganize the existing arrangements. The equipment at this date comprised six hand-engines and four steam fire-engines, stationed respectively in the Dockyard, Dongri Koli street, Paidhoni, and Kamathipura. The latter were horsed by the now extinct Omnibus Company, which for a monthly contract rate of Rs. 75 per horse undertook to supply one pair of horses and a driver to each engine at any hour of the day or night.³

By 1887 the rapid growth of the city forced the authorities to relieve the European police officers attached to the brigade of all police duties: and from that date the staff became purely a fire-brigade staff, consisting of a Chief Engineer, 3 assistant engineers, 4 firemen, 12 tindals, 60 lascars and 8 coachmen and grooms. The annual cost of maintenance was about Rs. 75,000, and the engines in use numbered 12, of which 8 were hand-engines and 4, stationed at Hornby road, Paidhoni, Upper Duncan road and Byculla, were steam-engines. Two years later (1889) the Municipal Corporation appointed a committee to consider the subject of reorganizing the staff, as a result of which several fresh posts were created, notably that of Chief Officer, to which Mr. W. Nicholls was appointed in 1890.⁴ Under his auspices considerable improvements

¹ Annual Report of the Municipal Commissioner, 1890-91, 323; Michael's History of the Municipal Corporation, 379.

² Times of India, 15th June, 1865.

³ Michael's History of the Municipal Corporation.

⁴ Michael's History of the Municipal Corporation.

have been effected, among them being the promulgation of a working code, the continual training of the staff, the provision of uniforms, the appointment of a surgeon to the brigade, and the provision of pensions for the staff.

Nine fire-brigade stations have been built at Byculla, Babula tank, the Fort, Colaba, DeLisle road, Mahim, Dadar, Mazagon and Bhuleshwar. The present equipment includes, besides various life-saving appliances, one petrol motor-engine, one chemical engine, 8 steam-engines, and 8 hand-engines; while the total number of all ranks in the department is 221, including the Chief Officer, a head foreman, 6 foremen and 9 engineers. The annual cost of the staff amounts to more than Rs. 58,000 and the annual cost of maintaining all the stations in a state of efficiency is estimated at 1·29 lakhs. The recent addition of a motor-engine has increased the efficiency of the brigade. The engines are located in twelve different places.

During the last five years the average annual number of fires was about 100. Of 102 fires in 1908-09, 28 were caused by the careless throwing down of lights, 24 by careless use of lamps and fire, and 28 were due to unknown causes.

The question of lighting the streets of Bombay was first seriously considered in the year 1833, when a committee, appointed by the Justices of the Peace, decided that the Bench possessed due legal authority to light the streets; and recommended it to invite tenders for the provision of lamps and posts.¹ No steps to this end were however taken till ten years later (1843), when the Bench formally resolved that all available funds should be applied in the first instance to the lighting of the principal streets, as a measure tending to the comfort and security of the inhabitants. By 1853 there were 50 lamps in existence, which were lighted from dusk to midnight throughout the year, excepting on nights of moonlight. The cost of these arrangements worked out to about Rs. 17 per lamp per annum. Six years later (1859) the Bench of Justices recorded

¹ Apparently there was a doubt whether the Bench of Justices could legally light the streets, and a reference on the point was made to the Supreme Court. Hence the delay.

its opinion that it was most desirable to light the town with gas, but realizing that the municipal fund was insufficient to defray the cost of such lighting, and at the same time deeming a special tax for the purpose undesirable, the Bench deprecated any definite contract being entered into with the Gas Company. But in 1861, the Municipal Commissioners, with the full approval of the Bench, proposed to ask Government to pass a special enactment enabling the Municipality to appropriate to gas-lighting a portion of the sum annually set apart for the drainage of Bombay. Government agreed to the proposal, and requested the Bench to consider the advisability of raising a loan in preference to the course approved by the Municipal Commissioners. The raising of a loan was approved, and on the 7th October 1865 the first gas-lamps in Bombay were lighted. These lamps were erected along Bhendi Bazaar, the Esplanade and Church Gate street and were lighted during the afternoon, the lamp-lighters being followed by a large crowd of wondering natives¹. By the end of the year the number of gas-lamps had increased to 220; and the action of the Municipal authorities in this respect was so greatly appreciated that during 1866 several native gentlemen presented the city with large ornamental lamps to be placed in central positions on the public roads.

The lighting of the town with gas gradually expanded simultaneously with a reduction of cost, which in 1871 worked out to Rs. 8½ per lamp per month. In 1880-81 the total number of street lamps lighted during the year was 3,177 gas and 224 kerosine oil lamps, the illuminating power of the former being equivalent to 12 sperm candles' power. In 1882 the Arthur Crawford market was lighted by electricity; and in the following year the Municipal Corporation entered into an agreement with the Eastern Electric Light and Power Company, under which the Company had the right to lay, conduct and maintain electric cables under, along or over certain of the public streets and roads of the city.² The Company however had to go into liquidation in the following year, and for the time being the Crawford Market had again to be lighted with gas. The

¹ Times of India, October 9th, 1865.

² Michael's History of the Corporation.

question of lighting portions of the city by electricity was however again brought forward in 1891, and in 1894 the Corporation sanctioned a certain sum for the provision of additional electric-lighting plant for the municipal offices and Crawford Market. In 1895 the contract with the Gas Company was renewed and contemplated the gradual conversion of the ordinary gas lamps into incandescent lamps—a work which was completed within twelve months of the signing of the contract. The light of the old gas lamp was equivalent to only 14 candle-power, while that of the incandescent lamps, which number 4100, is 30 candle-power. Double, triple, quadruple and quintuple lamps and high power self-intensifying lamps are placed in different spots and at various junctions.

At the end of the year 1908-09, the total number of gas lamps in the city was 4400, and of kerosine oil lamps 1831, while the cost of the former amounted to 2·8 lakhs and of the latter to Rs. 49,000. In 1906 the Corporation decided to do away with the electric-lighting plant at the Crawford Market, which had been in existence since 1894 and was almost worn out, and to light the markets by high candle-power gas lamps, which have since proved very satisfactory. The electric-lighting of the municipal offices was at the same time provided for by connecting the installation with the supply mains of the Bombay Electric Supply and Tramway Company.

The first market appears to have been established for the sale of fruit, vegetables and flowers in 1696 within the Fort, and dealers in those commodities were permitted to occupy the market, free of rent or any other impost.¹ In 1769 two large sheds were built within the town walls "for the public markets to be held in, one for meat and fowls, and the other for fruit and greens," and a constable was appointed to attend the sheds with an allowance of 4 annas a day.² During the administration of Mr. Hornby (1776-84), a market known as Mahomed's market was established, which was destroyed by fire (probably the great fire of 1803), and subsequently rebuilt in 1809 during the governorship of Mr. Jonathan Duncan. This market was

¹ Bombay Courier of 3rd November 1846.

² Bombay Gazetteer Materials, Part II, 72.

"open to all descriptions of persons dealing in vegetables, fruit and flowers, free from any tax, fee, *dasturi* or other emolument whatsoever".¹ A mutton market² was erected in 1794 at a cost of Rs. 2,940; and in 1803, after the great fire, a site in the Fort known as the Governor's old horse-stable was converted into a mutton and vegetable market.³ About 1837 a market for fruit and vegetables was erected at Erskine road, and about the same date the Court of Petty Sessions appointed a clerk of the markets to supervise generally the sale of all commodities, and prevent their being disposed of to purchasers in the public streets.⁴ Other centres gradually sprang into existence until in 1865 Bombay contained the following markets, yielding no revenue :—The Green or Duncan market in Sheik Memon street, consisting of ranges of low tiled open sheds, badly paved and undrained. The Boribandar Mutton and Fish market, unpaved, and including a yard belonging to a neighbouring mutton slaughterhouse. The Beef market in the yard of the slaughterhouse in Butcher street, midway between the two markets above-mentioned. A private market in Abdul Rahiman street of a most insanitary character. The Mutton and Fish market in Nall bazaar. The Vegetable market in Nall bazaar. An enclosure in Mody street for the provision of the North Fort, constructed in 1847 at a cost of Rs. 1,655.⁵

The slaughter-houses of the city at the same date were, if possible, less sanitary than the markets. Situated

¹ This was the inscription on the wall of the market. (*Bombay Courier*, 3rd November 1846). It was known as the Green Market or Duncan Market.

² Michael, 485.

³ *Bombay Gazetteer Materials*, Part II, 74.

⁴ *Bombay Courier* of 17th December 1836. Captain Seely writing in 1825 (*Wonders of Ellora*) remarked :—"The markets at Bombay are well supplied, and for the most part the articles are of moderate price. The fish are excellent, vegetables are abundant and good, poultry is reared by the Portuguese in great quantities and sold cheap. The bread is said by strangers to be preferable to that made in any other part of India."

⁵ Michael, 478-479, *Report on the sanitary state of the island of Bombay*, 1864, p. 24.

"The Bread Market, as it was styled, was quite a feature of Bazaar Gate street. It might have been more appropriately named "Breakfast Bazar," as here were sold not only bread, but all the other ordinary requisites of the breakfast table, such as butter, tea, sugar and eggs. It may be noted that here the dealers in

(one in Mandvi and the other at Bori bandar,) they were of the most antiquated pattern, one of them being a mere shed built on stakes below high water-mark, from which the blood and offal streamed on to the mud of the foreshore, where it was left to putrify for several hours.

In 1865 the Municipal Commissioner, Mr. Arthur Crawford, set himself to remedy this condition of affairs. A plot of ground was obtained from Government, and a general market, now known as the Arthur Crawford market, was erected. The Erskine road and Fort markets were also opened in the same year. In 1893 three more markets were built to meet the wants of the people living in different localities and four others were subsequently erected, while proper slaughter-houses were erected at Bandora outside the limits of the island. At present (1909) the city contains 12 municipal markets, the chief of which are the Arthur Crawford market, the Erskine road (or Nall Bazaar) market and the Bhuleshwar market.

The Arthur Crawford market is built upon a triangular plot of land, bounded by the Carnac, Paltan and Esplanade roads, and presented by Government to the city in 1865. The market, which was completely opened in 1869,¹ consists of three divisions, the green and general market with the Superintendent's office, residence and the clock-tower being situated on the north-west, the godowns, purveying-shops and fowl-rooms on the south, and the

Arthur Crawford Market.

eggs were all Parsis. The general price was one pice for two eggs, whereas now an egg cannot be had for less than two pice. Some of the egg vendors thrived so well that they became men of substance. The Bread market was so close, ill-paved and dirty, that the Municipality of the present day would not tolerate it for a moment. At some distance from it, at Modikhana, was the principal market of the Fort. It is now held under one roof; but fifty years ago it consisted of a range of low shops in rows, the intervening open space being utilized by squatters retailing fish and vegetables. Unlike the Bread market, it was clean and well kept. The question of its removal was a vexed one many years ago. But the central situation was so very convenient to the inhabitants of the Fort that they sent a deputation, myself being one of the number, to the Governor appealing against its removal, with the result that, through various vicissitudes, the old market has stood its ground to this day." (Mr. K. N. Kabraji's Reminiscences in the Times of India, 1901).

¹ The fruit and vegetable section was opened on the 16th January 1868 and the beef market in 1869. The reclamation of the site, which was very low-lying, was commenced in March 1867, and the foundations were begun in July of that year.

mutton and beef markets on the east. The markets were completed at a cost of Rs. 19,49,700 and are lighted by incandescent gas. The market contains altogether 888 rent-producing compartments, including 29 fowl-rooms and 28 purveyors' shops and godowns, out of which 765 were occupied in 1909. The income of the market from rents and fees amounted in 1909 to Rs. 1,04,000. Excluding the Superintendent and an assistant, who have duties connected with all the markets on the island, the staff of the Arthur Crawford market comprises an inspector of meat, an inspector, 2 naiks, 8 peons, 31 labourers, one gardener, and six police *ramosis* (watchmen). There is also a general inspector on the market establishment who performs multifarious duties under instructions from the Superintendent. The market is open from 3-45 a.m. to 10 p.m., the busy hours in the morning being from 5-30 to 10, and from 4 to 7-30 in the evening.

The green and general market is divided into a fruit section and vegetable section, the central portion being surmounted by a tower, 120 feet high, containing a clock which is illuminated at night. The fruit section is in the masonry wing and contains 171 stalls,¹ the larger number of which are reserved for fruit and the rest for flowers, *pan-supari*, herbs, plantains, lemons and plantain leaves.² The vegetable section is in the iron wing and contains 401 stalls, some of which are regular woodwork shops running the whole length of the building. Here are sold vegetables of all kinds, flour, grain, bread, butter, oilman-stores, Indian and English biscuits, confectionery, spices, groceries, tobacco, sugar, molasses, dates, stationery, cutlery, hosiery, boots, shoes and fancy goods. An ornamental drinking fountain, designed by Mr. J. Lockwood Kipling and presented by the late Mr. Cowasji Jehangir Readymoney, stands in the angle of the two wings.

The mutton and beef markets are situated on the other side of the central garden, and are divided into three sections :—the *Mundi* or head bazaar, the fish and mutton market and the beef market. The mutton is brought

¹ Some of the stalls are of stone, some of wood. In the latter shelves and iron rails are provided for the display of fruit.

² Of these one is reserved as a Hindu tea-shop, two or three are let to shroffs, and a few to sweetmeat sellers.

from Bandora¹; the fish section contains 119 stalls, more than half of which are reserved for the sale of Indian salted fish. The stalls are in four rows, and are made of masonry covered with Yorkshire flagging. The market has accommodation for 250 fishmongers, and has an eating-house and shroff's shop attached to it.² The right of occupying the fish area is farmed out every year. The beef market, which is an iron-building in the form of a cross, contains 84 iron stalls.

The fowl-sheds to the south of the vegetable and fruit sections number 26, of which 6 are reserved for the sale of imported animals and birds, and the remainder for poultry. Three of the fowl-sheds are generally used by the purveyors of the markets. The godowns likewise number 26, out of which 2 are reserved for the use of the market department. At the western end is a covered weighing-shed, where consignments are first tested before

¹ Cattle destined for the meat-supply of the city are procured from all parts of the Presidency and collected in the fair-ground of the slaughter-houses at Bandora for examination. Forty-eight hours are allowed to elapse before inspection, when the healthy animals are transferred to the stock-yard and thence, after a further careful inspection, to the slaughter-houses. The slaughtering is usually performed late in the afternoon, and by 9 or 10 p.m. the carcasses are cleaved and dressed. Occasionally as many as 150 head of cattle and 1500 sheep and goats are killed in a day. By 10.30 p.m. the meat has been packed in special meat vans, with a carrying capacity of $1\frac{1}{2}$ tons each drawn by heavy draught-bullocks, which cost about Rs. 300 a piece, and before midnight the vans (16 beef vans and 19 mutton vans) set off to Bombay through the Malim woods. The meat arrives at the markets about 3.30 a.m. and is again inspected before sale. When the markets were first opened the meat was brought into Bombay by a special train, in which the beef vans were separated from the mutton-vans by three carriages for coolies, but this system was found inconvenient and the bullock-vans were substituted. The Municipality in 1903 purchased a motor-van which proved tolerably successful, and added a second in 1907. The former can contain about 250 carcasses, and the trailers attached to the latter about 160 apiece.

² The fish supply is almost entirely a local monopoly. A certain quantity comes from Danda, Varsova, Bassein, Virar, Bhayndar, Bandora and Kurla in the Thana District, and during the monsoon a good deal is railed down in ice from Bulsar and Billimora in Gujarat. Otherwise, and during the fair season, the fishing-eastes of Bombay supply all the fish for the market, after landing their haul at Colaba, Chaupati, Mazagon, Matunga, Varli, Sion and Mahim.

being distributed to the stalls for retail sale.¹ The enclosure is laid out as a garden with a handsome fountain in the centre.

Other Municipal Markets.

The Bhuleshwar market is built upon the site of an old private market for fruit and vegetables, which was burnt down in 1868. It comprises 164 stalls reserved exclusively for the sale of fruit and vegetables, and is supervised by an inspector, who is also in charge of the Fort and Colaba markets. The staff consists of a sub-inspector, 2 peons and 3 labourers. The stall-holders are chiefly Hindus, with a sprinkling of Muhammadans, while from 40 to 60 vegetable sellers are allowed to squat daily in the market at a fee of 2 annas per seat per diem. The Nall Bazaar or Erskine road market was opened in 1867 and enlarged in 1887. It is divided into (a) the old fruit and vegetable market, (b) the new fruit and vegetable section, (c) the mutton market and (d) the fish market. The fish market, which is in charge of a fish contractor,¹ contains an ice and aerated water shop, a shop for the sale of country-salt, and places for shroffs to do business. This market caters for the poorer classes, and is supervised by an inspector, who is also in charge of the Foras road and Pedder markets, a sub-inspector, 7 peons and 17 labourers. The Fort market, constructed in 1867, contains two sections, one for fruit and vegetables and the other for fish and mutton, and is provided with 2 peons, 1 ramosi and 3 labourers. The Colaba market comprises two similar sections, and is in charge of 2 peons and 3 labourers, working under the Bhuleshwar market inspector. The other markets are the Pedder market, which contains a pork section; the Foras road market, which sells fruit, vegetables and mutton; the pork market at Sonapur, which also contains a slaughter-house, and is patronised chiefly by Native Christians and Chinese; the DeLisle road

¹ The first consignments arrive at the market in the afternoon. The produce is weighed for a small fee, and the business of "the man with the scales" is so brisk that between Rs. 6,000 and Rs. 7,000 are paid every year for the privilege of doing this work. The scale-man is known to be honest and many a cultivator up-country, who has no agent in Bombay, consigns his produce to him for sale; and on the day of sale a *hundi* with the brokerage deducted, is despatched in return. By 7 a.m. the stalls are replete with the choicest Indian fruits.

market for the sale of live sheep and goats, brought in from the fair ground at Bandora for slaughter in private premises;¹ and the Fergusson road market for the sale of vegetables, fish and mutton. Since 1908 the Parbhadevi road and Elphinstone road markets have been opened.

There are, besides the municipal markets, 16 private markets² in Bombay which have been licensed under the provisions of the Municipal Act. Of these the Adamji Pirbhai market, which has existed for twenty-three years, occupies a site once covered by the buildings of the Indo-British Institute. It is situated in Lohar Chal street and comprises a fish market, capable of accommodating about 60 fisher-people who are charged 3 pice per basket twice a day, and a vegetable market containing 52 stalls, the daily rents of which vary from $1\frac{1}{2}$ to 4 annas. Part of the ground-floor of a building facing the market is let out for mutton stalls, for which a daily charge of 2 annas per stall is made. The ground-floors of most of the buildings surrounding the market are let out as shops, godowns and dwellings. The owner of this market is Sir Adamji Pirbhai, Kt., who devotes the income of the market to defraying the expenses of the Adamji Firbhai sanitarium at the corner of Charni road. The Chira Bazaar market in Girgaum road, which is the joint property of four Muhammadan brothers, contains 16 mutton stalls, 24 vegetable stalls, and room for 32 fish-sellers. There are also 6 shops facing the public road outside. The rents charged for the sale of mutton, vegetables and fish are respectively $2\frac{1}{2}$ annas per stall per diem, 2 annas per stall, and 1 to $1\frac{1}{2}$ annas per basket twice a day. The Don Tar market, situated at the corner of Jackaria Masjid street and 1st Chinchbunder road, has been in existence for 45 years, and comprises 8 mutton stalls, 2 mincing stalls, 10 vegetable stalls, and 8 outside shops. The Umarkhadi market in the street of the same name contains 12 mutton stalls, 30 vegetable stalls, and 12 outside shops for the sale of cocoa-nuts, *supari*, groceries, etc.;

Private Markets.

¹ The dealers, who rent the pens in this market, are known as Phadkaris.

² This does not include 5 cloth markets, the chief of which are Mangaldas Nathubhai's market near the Jama Masjid, the Mulji Jetha market, and a new market near Ramwadi, Kalbadevi road.

but owing to the fact that the property is in the hands of the Receiver, High Court, most of these stalls are vacant. The Khetwadi main road market, situated at the corner of Khetwadi main road and 1st Parsiwada street and built in 1874, contains a small number of vegetable and mutton stalls, which are let out to the butcher attached to the market for Rs. 3 per diem; while the Byculla market (also called the Guzri Bazaar), which was built in 1859, is devoted to the sale of mutton, vegetables and fruit and contains about a dozen stalls, which fetch from 2 annas to Rs. 1/4 a day. A certain amount of fish is also sold here in the morning. Other private markets are the Haines road or Agripada market, built in 1873 for the sale of mutton, fish, and vegetable; the Tank Bandar market; the Parel road fruit and vegetable market, known locally as Dhondi Meher's market, which charges one pice per basket, bundle or bag of each commodity introduced for sale; the Parel Chal market at Lalwadi, formerly owned by Mr. Fazulbhoy Visram, C.I.E., for the sale of mutton, fish and vegetables; the Bhoiwada market, which has been in existence for nearly half a century; the Parel village market, in which the rates for stalls vary from Rs. 4 to Rs. 6 per piensem according to the character of the commodity sold; the Upper Mahim market in Mahim Bazaar road, the Dadar market, which is let by the owner on contract for Rs. 10/4 per diem; and the Vadala market which is a mere shed, in which squatters pay a daily fee of $\frac{1}{2}$ an anna per seat for the night to sell vegetables and fish. It also contains a mutton shop.

*Market
Arrange-
ments.*

The letting of stalls in the Municipal markets rests with the Superintendent of Markets subject in certain cases to the sanction of the Municipal Commissioner. The principal market day in Bombay is Sunday, when the mills and offices are closed, and people are therefore free to make their purchases for the week. Articles of a perishable nature are exposed for sale as long as they remain in good condition, after which the stall holders usually dispose of them to hawkers, who sell them cheap in the streets of the city. Any quantity not disposed of in this manner is thrown away. Fruit and vegetable growers

up-country either consign their produce to Bombay¹ for sale on commission or sell the right of removal to Bombay merchants who make their own arrangements for transport. Meat and fish, unfit for consumption, are seized and destroyed under the provisions of the Municipal Act. The stall-holders and the butchers in all the

¹ The fruit and vegetable supply of Bombay is drawn from a wide area. Nagpur, Poona and Ahmadnagar supply oranges and sweet limes; Poona, Nasik, Karauli, Quetta and Kabul supply grapes between August and February; while apples are sent from Varsova between June and August, from Kashmir between September and March, from Bangalore between July and August and from Colombo and Kabul between March and July. Excellent apples are obtainable from Kulu, but the trade is hampered by heavy railway rates; while small consignments of American and Australian apples are sometimes seen, which sell for as much as Rs. 4 and Rs. 5 per dozen. Pine-apples come from Chaul, Billimoria Harnai, Goa and Singapore, throughout the year, while custard apples are grown partly in the city and are partly obtained from Poona, Aurangabad and Surat between September and November. Plantains, yellow, green and red, are imported in thousands from Bassein, Surat and the local oarts and gardens; peaches are furnished between July and October by Panchgani, Mahabaleshwar, Poona, Karachi, Quetta and Peshawar; while between February and June there is an enormous import of figs from the Deccan. The strawberries of Mahabaleshwar, which are obtainable between February and May, have earned a well-deserved reputation, and occasionally one may purchase excellent consignments of mangosteens from the Straits. Perhaps the most popular fruit is the mango, particularly those grown in Bombay itself. The *Aphoos* (Alfonso) variety comes from the gardens of the city and from Ratnagiri between March and June, while the *Pairi* (Pereira) variety is imported from Thana, Bankot, Surat, Bangalore and Madras, the Thana, Bankot and Surat consignments appearing in March-June, and the rest between June and August. The melons of Kabul command a large sale, as also do the water-melons of the Presidency.

The Bombay Presidency supplies most of the vegetables sold daily in the markets, but a considerable quantity comes from more distant places. Potatoes, for example, are sent from the Nilgiris in September-November, from Australia in August-December, from Mahabaleshwar in November-February, from Poona in September-December, from Cawnpore in December-March, from Gujarat in April and May, and from Karachi in December-February. Cabbages, beans and peas for the city's consumption are grown chiefly in the Deccan and Gujarat, but a certain quantity of cabbages are raised from Bengal and of peas from the United Provinces. Onions are sent from Poona, Nasik, Thana, and Khandaesh, as also are cucumbers, cauliflowers, and pumpkins; while purely Indian vegetables like *bhendi* and *brinjal* are either locally grown or imported from neighbouring districts.

Flowers are a feature of the Arthur Crawford market. Poona and the Deccan supply most of the roses and other flowers that appeal most to the western eye, while such flowers as the Hindu prefers, the jasmine, the champak, and the sweet-smelling creepers, are supplied by Bombay and the places in the immediate vicinity.

Municipal markets, the *Phadkaris* and the *Kamatsis* of the DeLisle road sheep market and the butchers in all private markets are licensed under this Act. Other dealers including fowl-dealers¹ and squatters, are under the jurisdiction of the fish-contractors. The rentals of stalls in all markets, except the DeLisle road and Fort markets and the pork-stalls and fowl-rooms, are payable quarterly. The tenants of the fowl-rooms pay a monthly rent; the pork-stall holders pay annually; and all stall-holders in the two markets above-mentioned pay half-yearly. Standard weights and measures are preserved in the office of the Superintendent of Markets, and provision has been made for the comparison, verification and stamping of all weights and measures used in the municipal markets.

*Public
Gardens.*

The oldest public gardens in Bombay are the Victoria Gardens, which in 1861 were laid out on the Mount Estate, Mazagon (now included in Byculla), and stocked with plants from the garden of the Agri-Horticultural Society of Western India at Sewri. The latter society was formed in 1830 under the auspices of Sir Sidney Beckwith, then Commander-in-Chief and Acting Governor of the Bombay Presidency, with the object of encouraging agriculture and horticulture in Western India.² In 1833 the Society acquired land at Sewri, which was laid out as a garden by Colonel Dickinson and Dr. Heddle, assisted by an expert European gardener, and was, after the grant of further areas in 1837 and 1840, finally established in 1842 by Dr. Buist and Dr. Giraud, the former carrying out the general arrangement of the land, and the latter organizing the botanical section. The Sewri garden

¹ Of the poultry sold in Bombay, the fowls and chickens are mostly imported from Kolaba, Thana, Katnagiri, Gujarat, Nasik and Hyderabad; ducks come from Bassein, Goa and the Kaveri district of the Madras Presidency or are locally purchased; Nasik, Ahmadnagar, Poona and Ahmadabad supply pigeons; while turkeys and guinea-fowls are procured from Ahmadabad, Jubbulpore and Allahabad. Game birds, such as teal, quail, snipe and wild duck are procured from Thana and neighbouring districts; wild partridges are brought down from the Deccan during the open season.

² The first President of the Society was Mr. Newham and the first Secretaries Mr. Vanill and Sir Jamsetji Jeejeebhoy. The expenditure of the Society was met by subscriptions, public donations and grants from Government.

was maintained until 1862, when its plants were transferred to the Victoria Gardens, the charge and direction of which were vested in the Agri-Horticultural Society until 1873, when the Society ceased to exist. Since that date the Victoria Gardens have belonged to the Municipal Corporation, while the old Sewri garden has since 1863 been used as a European cemetery. The Victoria Gardens comprise about 50 acres, cost Rs. 74,000 annually in maintenance, and produce an annual income of about Rs. 9,000. The annual number of visitors is estimated at nearly 1,700,000.¹

Other gardens in charge of the Municipality are the Elphinstone Circle garden, laid out in 1869, covering 12,081 square yards and costing annually more than Rs. 1,600; the Falkland road garden, laid out in 1870, covering 3,005 square yards and costing annually Rs. 420; and the Northbrook Garden in Grant road, which was laid out in 1874 in honour of the visit of the Viceroy, Lord Northbrook. This garden covers 12,085 square yards, was laid out at a cost of nearly Rs. 21,000 and annually costs about Rs. 1,500 for upkeep. The Sir Cowasji Jehangir garden at Mori road, Mahim, was made in 1876, comprises 5,272 square yards and is maintained at an annual cost of Rs. 628; and much the same cost is incurred on account of the Bazaar Gate garden in Hornby road, measuring 3,672 square yards, which was handed over by Government to the Municipality in 1881. Dick's Tank garden, which covers 2,740 square yards on the Parel road, was formed in 1884, and the gardens on Ridge road, Malabar Hill, comprising 52,675 square yards, in 1885, the approximate annual expenditure on them being respectively Rs. 400 and Rs. 700.

"The English have only a burying place called Mendham's Point, from the first man's name there interred, where are some few tombs that make a pretty show at entering the haven". This remark, made by Dr. Fryer in 1675, is the earliest reference to burial grounds in Bombay island : and the ground so mentioned, together with a

¹ For further information, See Victoria Gardens, under Places and Objects of Interest.

narrow strip outside St. Thomas' Cathedral,¹ were the only English cemeteries in Bombay until 1760, when Government decided on strategic considerations to demolish all the buildings and tombs at Mendham's Point, and open a new cemetery at Sonapur (on the present Queen's road). The actual site of Mendham's Point was the area now occupied by a portion of the Sailor's Home and the Crescent, and extended as far as the junction of the present Wodehouse and Colaba causeway roads.² Apparently only Protestants had the right of burying their dead here, the Roman Catholic burial ground being within the limits of the town until 1740, when the Roman Catholic Bishop obtained by exchange a site outside the town walls.³ Other communities in these early days had their own sites for the disposal of the dead, notably the Banias from Diu whom Gerald Aungier permitted in 1677 to burn their dead, presumably on the shore of Baek Bay, the Parsis whose first tower of silence was built on Malabar hill in about 1672, and the Muhammadans, whose ancient burial-ground may still be seen on Queen's road adjoining the Sonapur cemetery.

By 1760 the buildings outside the Apollo Gate had become dangerous as affording possible cover to an enemy, and the principal engineer, in his search for a more suitable spot for the disposal of the European dead, discovered in Sonapur "a cocoanut garden near the water-side at the nether end of the Moormen's (*i.e.* Muhammadans) old burying ground," which was shortly afterwards walled in by order of Government, and was from 1763 until 1867, utilized as the European cemetery.⁴ Burials in St. Thomas church and yard ceased entirely in September 1762. Adjoining the Sonapur cemetery were the Portuguese cemeteries "which had been in use for centuries;" the Hindu burning-ground and a burial-ground for low-caste Hindus, while

¹ A piece of land in Marine Lines, now covered with buildings, was also used as a cemetery until 1783.

² Many bones were discovered at the time of digging the foundations of the Sailor's Home. *Da Cunha, Origin of Bombay*, 332. The locality was also called Mendip's Point. *Ibid.*

³ *Bombay Town and Island, Materials*, Part III, 526.

⁴ The scurrilous author of "*The Adventures of Qui Hai*," who was resident in Bombay in 1844, gives an illustration of the Sonapur cemetery, which was at that time styled "Padre Burrows' Godown," Burrows being the name of the garrison chaplain of those days. By the time it was closed more than 19,000 persons had been buried in Sonapur.

it was a common practice to use the foreshore of Back Bay for the interment of the carcases of cattle and other carrion.¹ It can well be imagined therefore that by 1855 the juxtaposition and constant use of these cemeteries had given rise to serious complaints both from the public and the municipal authorities, who declared that the high mortality of the Girgaum section at seasons when cholera was epidemic was primarily due to the miasmata wafted from the cemeteries and mortuaries on the Back Bay foreshore.² Other parts of the city were hardly more sanitary ; for in addition to the general and highly dangerous practice in vogue among Brahmans, and other high-class Hindus of burying the corpses of still-born or newly-born children in the courtyards or under the bathing-places of their own dwellings, there were by 1855 at least seventy different places of interment situated in the very heart of the more populous quarters.

In the hope of remedying these evils, the Board of Conservancy requested the Senior Magistrate of Police in 1854 to draft a Bill prohibiting burial in the congested parts of the town ; and in 1855, under the directions of Government, he issued orders for the total and immediate discontinuance of all interments in the sands of Back Bay. These steps were followed in 1863 by the appointment of a Burial Commission, which two years later submitted a comprehensive scheme for the concentration of all cemeteries at or near Matunga. The project, including the constructional cost of Towers of Silence and the provision of railway communication was estimated to require an expenditure of 47½ lakhs. The cost involved being prohibitive, it was reserved for the Municipal Commissioner, Mr. Crawford, in 1865 to make the best arrangements he could for the closing of old cemeteries and the opening of new grounds. His first step was to obtain from Mr. Bomanji Framji Cama the old Agri-Horticultural Society's Garden at Sewri, which Mr. Cama had purchased in 1866, and to lay it out as a cemetery for Europeans of the Protestant, Roman Catholic, and Scotch Presbyterian churches. The land, which measured 52,000 square yards, was formally consecrated and opened in March, 1867, from which date

¹ Bombay City Census Report, 1881.

² Dr. Leith's Mortuary Report for 1854.

the old Christian cemeteries in Sônapur, Marine Lines¹ and Girgaum were finally closed. For the Native Christians and Portuguese communities a new site was purchased at Matunga for Rs. 8,000 in 1866; the old Colaba cemetery, which had been in use since 1816, was closed in 1872; the American cemetery in Grant road, which had been opened in 1813, was relinquished about the same date in favour of a new site at Antop hill; and new cemeteries were opened at Matunga, on land granted for the purpose by Government, for the Brahma Samaj, the Armenians, low-caste Hindus, and a section of the Jewish Community. The general condition of Hindu cemeteries and burning-ghats was also improved, as the result of a meeting of the Hindu Justices of the Peace convened in 1871; the Muhammadans were induced to wall in their cemetery at Back Bay in the same year; and in 1875 the system of burying the Hindu dead by contract in the cemetery on the Flats was finally abolished. Thus by 1881 the efforts of the Municipality had resulted in most of the old and insanitary graveyards being closed and in 19 registered burning-grounds and 40 registered burial-grounds being opened at suitable distances from the city proper.

Since that date a large plot of land at Tank bandar has been allocated (in 1897) to the Sunni Muhammadans; the Bene-Israel were granted a burial-ground at Mount road, Mazagon, in the same year; and in 1903-04 two new cemeteries were opened in Narelwadi at the junction of the Mount and Victoria roads for the use of the Ismaili Momin and Daudi Bohra communities. In 1905-06 two more cemeteries were provided, one at Antop hill for the Babi community, and the other at Haines road for the Dhed caste. At the present date there are 73 burning and burial-grounds in use in the island, of which 51 are used by Hindus, 25 by Muhammadans, 9 by Christians, 3 by Jews, 2 by Chinese, 1 by Japanese, and 2 (Towers of Silence) by Parsis.

THE BOMBAY PORT TRUST.

Administration of Port prior to 1873.

Up to 1863 all public duties connected with the management of the harbour and its pilotage were divided among

¹ The Marine Lines cemetery had been in use since May 1826. The Colaba cemetery was closed in 1872; but four burials in family vaults were allowed after that date. Matunga cemetery was in use from 1820 to 1873.

several departments and offices of Government. The Government Secretariat in both the Public Works and Marine departments, the office of the Superintendent of Marine, the Master Attendant, the Commissioner of Customs and the Chief Magistrate, all played a part in the control of the port and its shipping, the official most directly concerned being the Master Attendant, who collected the port-dues, leviable under Act XXXI of 1857, and who, originally an officer of the Government Dockyard under the immediate control of the Naval Commander-in-Chief, was subsequently by a Government order of June 28th, 1859, made responsible to the Commissioner of Customs, was relieved of his duties in the Dockyard, and was placed in direct control of the pilot establishment and of the collection of shipping-dues. This system continued until 1863, when in consequence of the demand by the public and by the Chamber of Commerce for the better lighting of the harbour and for increased efficiency in the pilot-service, a Harbour and Pilotage Board, composed of five members, was created, which, placed in sole control of the Port and Pilotage funds, was empowered to place buoys and beacons in the harbour, to erect buildings, light-houses, etc., in the interests of the port, to employ and discharge pilots, and to make regulations for the efficient discharge of all duties connected with the port. The Master Attendant was appointed chief executive officer for carrying out the regulations of the Board. The Board remained in existence until the date of the formation of the Port Trust, which superseded it; and although it evinced considerable zeal in the improvement of the navigation of the harbour, it was throughout the whole

¹ Sir Bartle Frere's speech at the laying of the corner-stone of Kenney Lighthouse on the 19th January 1867. (Report of the Harbour and Pilotage Board, 1873). The Times of India of the 22nd May, 1841, mentions a Dock Committee, which held weekly meetings to discuss the affairs of the port and the issue of the same paper for the 3rd January, 1846, mentions a Committee appointed to frame Port regulations.

² The first members of the Board were Mr. George Inverarity, Commissioner of Customs, as President, Captain Young, Indian Navy, as Vice-President, Mr. H. Forman, merchant; Mr. A. Gompert, elected by the Chamber of Commerce, and Mr. A. Grant, selected by Lloyd's Agents in Bombay. In 1866 the Executive Engineer to the Municipality was added as an extra member to the Board.

period seriously handicapped by lack of funds. It commenced work in 1864 with no balance to its credit, inasmuch as a sum of 13 lakhs standing to the credit of the Port Fund at that date was appropriated by Government for the Mody Bay reclamation, while the only property vested in it by the Government regulation consisted of the light-houses at Colaba and Dolphin Rock, two light-vessels, nine pilot-boats, a conservator's boat, three signal-stations at Colaba, Centre hill and the Castle, and a boat-shed. In spite of these drawbacks, however, the Board contrived to extend the Mazagon pier, to improve the Apollo pier by segregating the cotton-traffic and constructing a foot-path for pedestrians, to mark the shoals in the harbour, to supply pilot-schooners, and to purchase in England a first-class life-boat and rocket life-saving apparatus. They also erected the Kennery light-house, which absorbed nearly two lakhs out of the 8½ lakhs, expended upon harbour improvements. The total receipts of the Board for the nine years ending 1871-72 amounted to 36½ lakhs and the expenditure for the same period to 38 lakhs, the receipts being chiefly port dues, measuring fees, salvage proceeds and pilotage funds; and in connection with this deficit the Board wrote to Government in 1872, urging the latter very strongly to grant the Board certain further sources of income, which were at that date appropriated to the revenue authorities. Government however were unable to comply with the Board's request; and it is conceivable, therefore, that further improvements in the administration of the port would have been indefinitely postponed, or would have at least proceeded very slowly, had not external circumstances impressed upon Government the need of a properly constituted and suitably financed Port Trust.

The formation of the
Port Trust.

The decision to constitute a Board of Trustees for the administration of the affairs of the Port of Bombay originated in the apprehension on the part of the Bombay Government that trade-interests were seriously endangered by the possession by private companies of a monopoly of the landing and shipping facilities of the port. This apprehension was particularly felt in the case of the

Elphinstone Land and Press Company, so named after Lord Elphinstone, Governor of Bombay, which was originally formed in 1858 for the reclamation of the foreshore, the construction of godowns for merchandize and the erection of a cotton-press. The company commenced operations by taking over a lease for 990 years of a piece of waste ground at Naoroji hill, subsequently known as the Elphinstone bandar, the frontage of which was on the line of road now called Clive street : and it subsequently acquired two adjoining properties to the south of Elphinstone bandar, known as the Clare and Carnac bandars, the frontage of which, situated about halfway between Frere and Argyle roads, extended southwards as far as the present Carnac Bridge road. In 1862 the company entered into an agreement with Government to provide upwards of one hundred acres for the terminus of the Great Indian Peninsula Railway and other purposes, receiving in return the right to reclaim from the sea for their own advantage an area of 250 acres, fronting the properties they had previously acquired. By 1871 more than seven million cubic yards of material had been deposited, a land and dock estate had been laid out, comprising for the land estate more than one hundred acres of building-plots, nine miles of roads, and ten miles of drains ; and for the dock-estate about 71 acres of wharf, about six aeres of sheds, two miles of permanent wharf-walling, forming two basins and one bandar at which there was six feet of water at extreme low-water spring-tides, and about one and a half miles of temporary walling.

From the commercial point of view the bargain of 1862 appeared *prima facie* very favourable to Government. They conceded what to them, in its natural state, was quite valueless, and in return obtained property estimated to have cost more than Rs. 50,00,000 to reclaim, which they were bound to provide for the railway. Yet politically the bargain was a mistake ; for the company secured a monopoly of the harbour-frontage opposite that point in the native town where the country-trade had for years centred, and, owing to the proximity of the railway terminus, were also in a position to subject a large portion of the trade of the port to wharfage and other dues. Shortly

after the contract had been signed the outbreak of the American war and the consequent stimulus afforded to the cotton-industry ushered in an unexampled era of prosperity for Bombay. The company, which was under the management of Messrs. Nicol and Co., an enterprising local firm, set to work with their able engineer, Mr. Ormiston, to carry out their contract, and up to 1865 displayed an almost feverish vigour in the prosecution of the work. Gangs of Chinese labourers were imported, a fleet of barges was constructed on the most approved principles to bring earth from the other side of the harbour, and a regular service of trains was established to bring in material from Kurla in Salsette. Everything was done that a combination of capital, skill and energy could effect. In the meanwhile the speculation mania rose to its height, shares in companies of all kinds commanded ridiculously high prices, and, in common with those of the wildest schemes, the shares of this *bona fide* company reached quite a fabulous premium, —at one time as high as Rs. 1,80,000. The time of prosperity was not of long duration, and the hour of humiliation was at hand. Consequent mainly upon the cessation of the American war, and partly upon the extent to which insane speculation had been carried, the whole trade of Bombay temporarily collapsed and commercial ruin became general. The property of the Elphinstone Company did not escape the general depreciation, and its shares fell to 50 per cent. discount. Meanwhile the Company had almost completed their agreement with Government; and out of a subscribed capital of Rs. 2,16,00,000, a sum of Rs. 1,28,00,000 had at this date been paid up and nearly all expended. In the state of affairs, which characterized the year 1866-67, the company considered it impossible to call in the remainder of the subscribed capital; and, being in considerable difficulties, they applied to Government for assistance, which ultimately resulted in the loan to them of Rs. 10,00,000.

At this juncture, the Government of Sir Seymour Fitzgerald (1867) strongly urged upon the Government of India the advisability of buying out the company, and of placing the administration of the harbour foreshore, thus regained, in the hands of a public trust. After a correspondence extending over two years, the Secretary of State in June

1869 sanctioned the proposals of the Local Government, which *inter alia* provided (1) that the Elphinstone property should be acquired and, together with the whole of the foreshore of Bombay harbour, within limits defined by the Bombay Government and so far as it was the property of Government, and all wharves, the property of Government within the same limits, excluding any portion required for public administrative purposes, should be made over for administration to a Board of Management constituted under a legislative enactment; (2) that the Board thus constituted should be debited with the whole sum paid to the Elphinstone Company and the costs of the transfer, with a capital sum representing twenty years' purchase of all existing income, then derived by Government from the whole property, and thirdly with the whole outlay incurred by Government from the year 1815 in the reclamation of land made over to the Board or for wharves or other conveniences, so made over, from which income was not obtained; (3) that the Board should be vested with the right of levying wharfage and other fees and dues and of receiving rents on all the property made over to them; (4) that the Board should pay interest to Government at 4½ per cent. per annum on the capital debt; and (5) that the Board should be authorized and required to levy such rates on shipping entering the port and on goods landed or shipped, as should, in addition to the wharfage rates, fees, rents and the other income of the Board, after paying all necessary charges, suffice to supply the sum due to Government for interest on the debt and for its liquidation in a term of years.

On receipt of these orders, Government entered into negotiation for the purchase of the Elphinstone Company's rights. The market-price of the shares which, following the collapse of 1865, had fallen to Rs. 505, had revived considerably, and in February 1869, was quoted at Rs. 810, which subsequently rose to Rs. 920 and again to Rs. 1,030 per share. In July 1869, it was finally agreed to purchase the Company's rights at the par value of the paid-up capital; the Company went into voluntary liquidation; and an Act (No. V of 1870) was passed by the Government of India empowering the liquidators

to transfer the property to the Secretary of State in consideration of the payment of the purchase-money in 4 per cent. Government of India stock, such stock to be issued and calculated at Rs. 100 for every Rs. 93 of the purchase-money. On these terms, the Company's property was taken over by Government on the 30th April, 1870, and the price amounted altogether to nearly 186 lakhs, including 13 lakhs previously advanced by Government. The stock issued was treated as an addition to the Government of India 4 per cent. loan of the 1st May 1865, and was subsequently converted into pro-missory notes of that loan. In October 1870, in furtherance of the proposal for the formation of a Board of Trustees, and in order to provide funds for the payment of interest on the debt created by purchase of the Elphinstone property, an Act was passed by the Bombay Legislative Council authorizing the levy of wharfage and other fees for landing and shipping goods at the Government bandars, wharves and landing-places. Up to that date the Government wharves were used practically free of charge, rates being levied only for goods not removed within the prescribed time. Rates became leviable under the new Act with effect from the 1st March, 1871.

The Act, constituting the Board of Trustees, was not passed until 1873; but in the meantime the whole of the property purchased from the company was managed by a department of Government on behalf of the Trust from the 1st May 1870. During this interregnum, some progress was made in adapting the Elphinstone and Mody Bay reclamations to traffic; but the three years' working resulted in an aggregate deficit of 6 lakhs, which was charged to the capital debt of the new Board on its formation. The Bombay Port Trust Act I of 1873 was published on the 26th June of that year, and gave legislative effect, with certain modifications, to the scheme as sanctioned by the Secretary of State in 1869. It provided for the creation of a corporation under the name and style of the Trustees of the Port of Bombay, consisting of not less than nine or more than twelve persons, of whom not less than one-third or more than one-half should be Government servants, and a Chairman, all of whom were to be appointed by

Government.¹ The Bandar Fees Act V of 1870 was repealed, and the Board was given power to levy dues at rates previously sanctioned by Government on all goods passed over their wharves, while the control of pilots and the conservancy and lighting of the harbour was taken out of the hands of the old Harbour and Pilotage Board and vested in the new Trust. The properties vested in the Board included the Elphinstone estate, the Mody Bay reclamation, east of Frere road, the Apollo Bay reclamation, the Wellington reclamation, the Apollo pier, the Tank bandar estate (timber ponds), the Customs bonded ware-houses (Customs bandar), the Kasara bandar, the saw-mills property, and the whole of the property of the Harbour and Pilotage Board, comprising chiefly the light-houses on Kennery island, on the Dolphin Rock, and at Colaba, the Mazagon pier, the signal-stations, the lightships, pilot-schooners and other craft.

The total debt of the Port Trust on account of the properties mentioned above was 220 lakhs, including 6 lakhs representing loss on the working of the properties from 1870 to 1873. Of the total sum, 212 lakhs bore interest payable to Government at 4 per cent for the first ten years and at 4½ per cent. thereafter, while 8 lakhs bore no interest but was repayable to Government. No capital charge was made on account of the properties transferred from the Harbour and Pilotage Board. During the earlier years of its existence, the Trust was unable to raise from its properties sufficient revenue to meet the interest upon the debt. The famine years 1877-78 and 1878-79 brought immense stores of grain into Bombay for distribution to the affected districts, and for the first time afforded a surplus; but for the period from June 1873 to the 31st March 1879 the accounts showed a total net deficit of 2·36 lakhs. This loss of revenue was chiefly due to the competition of private wharf-owners, holding the remainder of the fore-shore, chief among whom were Messrs. D. Sassoon & Co., who had built a small dock at the Colaba end of the fore-shore, the Colaba Land Company, the Mazagon Land

Revenue history of
the Board.

¹ The first Board, appointed on the 26th June 1873, consisted of Colonel J.A. Ballard C.B., R.E., as Chairman, and nine Trustees, of whom three were Government officials.

Company, and the Frere Land Company. This competition, while serving to keep down wharfage rates, gave no satisfaction to the trade, and was the source of much confusion and inconvenience, particularly in regard to the cotton trade, one portion of which centred in Mazagon and the other portion at Colaba.

To obviate these disabilities, Government in 1879-80 purchased, on behalf of the Trust, the private foreshore-owners' rights (with one or two unimportant exceptions) at a total cost of 75·4 lakhs, which was met by the issue of 4 per cent. debenture bonds, guaranteed by Government from Bombay provincial revenues. At the same time the Trust was reconstituted by Act VI of 1879, which, while authorizing the above purchases, also laid down that the Chamber of Commerce should have power to elect five of the Trustees, that the remaining seven and the Chairman should be nominated as before by Government, and that not less than three of the Trustees should be natives of India resident in the city of Bombay. Since the year 1880 the Chairman has been a full-time officer, devoting himself wholly to the business of the Trust : and with the exception of a few of the chief appointments, for which the sanction of Government is necessary, all vacancies in the establishment are filled up by the Chairman or the Board. A provident fund administered by the Trustees has been established, which provides retiring allowances for the officers and servants of the Trust. The Trustees have power to lease land for any term not exceeding 50 years, longer leases being submitted to Government for sanction ; and they have to submit to Government before the commencement of each year estimates of receipts and expenditure, their accounts being audited half-yearly by Government auditors. They have power to enter upon and budget for any project estimated to cost less than 2 lakhs ; but more costly schemes have to be submitted to Government, together with plans and estimates for approval.

Consequent upon the acquisition of a monopoly of foreshore rights in 1879-80, and the opening of the Prince's Dock on the 1st January 1880, the financial difficulties of the Trustees disappeared ; and a succession of surpluses for the nine years ending 1888-89 enabled the Trustees to

largely reduce the charges on trade and to appropriate large sums from revenue to meet capital expenditure. In 1889-90 the completion of the Victoria Dock resulted in a slight deficit; while famine and the outbreak of plague gave rise to heavy deficits in 1896-97 and 1897-98. During the five years ending 1903-04 the annual average surplus was $3\frac{1}{2}$ lakhs. Since 1904 there has been an unbroken succession of surplus receipts, which amounted annually to between 7 and 12 lakhs. This has enabled the Trustees to institute sinking funds for the repayment of the whole existing debt and to build up a large revenue-reserve. Receipts from the landed estates, obtained partly by purchase and partly by reclamation, have also steadily increased, and, including the rents of warehouses and godowns, amounted in 1908-09 to 19'94 lakhs. During the whole period from June, 1873 to the 31st March, 1909, the aggregate surplus on revenue account has amounted to more than 116 lakhs. The Trustees have also accumulated funds aggregating more than 2 lakhs for replacement of pilot-vessels and $46\frac{3}{4}$ lakhs for repayment of debt, and have during the 27 years ending 1908-09 made reductions in the charges on trade and shipping amounting to about $2\frac{1}{2}$ crores or 1 $\frac{1}{2}$ million sterling.

The following statement shows the annual receipts and expenditure in lakhs from 1870-71 to 1908-09:—

Year.	Receipts.	Expenditure.	Year.	Receipts.	Expenditure.	Year.	Receipts.	Expenditure.
	Rs.	Rs.		Rs.	Rs.		Rs.	Rs.
1870-71	10	...	1883-84	39 $\frac{1}{2}$	33	1896-97	46	48 $\frac{1}{2}$
1871-72	14 $\frac{1}{2}$	...	1884-85	39 $\frac{1}{2}$	34 $\frac{1}{2}$	1897-98	46	48
1872-73	14	...	1885-86	43	37 $\frac{1}{2}$	1898-99	52	50 $\frac{1}{2}$
1873-74	12 $\frac{3}{4}$	...	1886-87	39 $\frac{1}{2}$	35 $\frac{1}{2}$	1899-00	53 $\frac{1}{2}$	50 $\frac{1}{2}$
1874-75	14 $\frac{1}{2}$	6 $\frac{1}{2}$	1887-88	40	36 $\frac{1}{2}$	1900-01	52 $\frac{1}{2}$	52 $\frac{1}{2}$
1875-76	15 $\frac{1}{2}$	7 $\frac{1}{2}$	1888-89	43	40 $\frac{1}{2}$	1901-02	55 $\frac{1}{2}$	52 $\frac{1}{2}$
1876-77	15	7 $\frac{1}{2}$	1889-90	42	42 $\frac{1}{2}$	1902-03	59	55
1877-78	17 $\frac{1}{2}$	7 $\frac{1}{2}$	1890-91	43	43 $\frac{1}{2}$	1903-04	64 $\frac{1}{2}$	57
1878-79	16 $\frac{1}{2}$	7 $\frac{1}{2}$	1891-92	48	46 $\frac{1}{2}$	1904-05	66	58 $\frac{1}{2}$
1879-80	15 $\frac{1}{2}$	7 $\frac{1}{2}$	1892-93	44 $\frac{1}{2}$	46 $\frac{1}{2}$	1905-06	70	61
1880-81	25 $\frac{1}{2}$	25 $\frac{1}{2}$	1893-94	47	47 $\frac{1}{2}$	1906-07	73	62 $\frac{1}{2}$
1881-82	37 $\frac{1}{2}$	28 $\frac{1}{2}$	1894-95	48 $\frac{1}{2}$	48 $\frac{1}{2}$	1907-08	78 $\frac{1}{2}$	64 $\frac{1}{2}$
1882-83	36 $\frac{1}{2}$	31	1895-96	48	47 $\frac{1}{2}$	1908-09	76	68 $\frac{1}{2}$

The following table shows the approximate annual amount in thousands of rupees received from each main source of revenue during the last five years :—

(*000s omitted.*)

Heads.	Ru-pees.	Heads.	Ru-pees.
<i>II.—Continued.</i>			
I. Bandar properties		Cranage	1,38
Wharfage fees	5,89	Unloading carts	1,01
Extra fees	45	Railway siding fees	17
Basin rents and hand fees	89	Night and holiday work	62
Ground rents	10,95	Overside charges	55
Warehouse, shed and godown rents	6 40	Uncleared warehouse charges	46
Railway siding fees	56	Revenue from other sources	151
Revenue from other sources	2,01	III. Merewether dry dock	175
II. Prince's and Victoria Docks		IV. Interest and miscellaneous	313
Dock dues on goods	27,54	V. Port department and pilot- age	5.11
Dock dues on vessels	1,23	VI. Depreciation and fire insurance account	56
Ground and shed rents	1,89	Total Rs.	73,40

The operations of the Port Trust.

The history of the achievements of the Port Trust falls naturally into four periods. During the first ten years, 1873 to 1883, the energies of the Board were mainly devoted to prosecuting the works on the Elphinstone estate, including the construction of the Prince's Dock, which was opened for traffic on New Year's day, 1880. They also completed the Frere road across Mody Bay and other roads required for the convenience of trade and for the opening-up of building sites; they erected at a cost of 5·7 lakhs a fine range of permanent sheds for the storage of grain awaiting shipment on the Elphinstone estate, and seven large warehouses adjacent to Prince's Dock for the storage of piece-goods and other imports, which cost 4·2 lakhs; the lighthouse on the Sunk Rock was erected to replace the inner light-ship; a powerful steam-tug was provided at a cost of 1·5 lakhs; and the Trustees' workshops were transferred at a cost of 1·6 lakhs to the north of the Clerk Basin, in order to allow room for the Prince's Dock wharves. The second period from 1883 to 1893, was chiefly remarkable for the construction of the Victoria Dock and Merewether Dry Dock, which were urgently required for the convenience of a much increased trade and shipping; and besides these great works, the Board constructed a fine block of offices

for the dock and traffic staff and also for the administrative staff, and large ranges of warehouses for imports at the Victoria Dock. The filling of the old basin and other improvements at the Apollo Bandar were completed at a cost of $1\frac{1}{2}$ lakhs ; private property on the foreshore at Sewri was purchased for nearly $3\frac{1}{2}$ lakhs, and 3 lakhs were also spent on additional cranes and on improvements to the channel at Prince's Dock. No work of great magnitude characterized the third period, 1893-1903 ; but 66 lakhs were expended on works designed to facilitate trade and to develop the property of the Trust. Thus improvements to the two wet docks,—notably an increase of shed accommodation, extension of railway-sidings, and the deepening of the entrance-channel—swallowed 32 lakhs ; a new wharf was constructed at Tank bandar for the benefit of the coast trade ; the Mody Bay reclamation was adapted for the storage of bulk-oil ; and the construction of the Ballard Pier for the convenience of mail-passengers was commenced. In regard to the development of the landed estate, the construction of Reay road from Mazagon to Kala Chauki and numerous cross-roads, the reclamation of several swampy areas the construction of roads on the Apollo reclamation and Sassoon Dock estates, and the provision of quarters for labourers and other employés of the Trust at a cost of $2\frac{1}{2}$ lakhs were perhaps the most noteworthy achievements. The fourth period, from 1903 up to 1907 was mainly occupied in works preliminary to the important scheme for the provision of further dock accommodation. It became necessary in the first instance to provide for the large traffic at Mody Bay, which will be displaced by the new docks. For this purpose two broad jetties have been formed at Mazagon by reclamation, affording a storage space of 26 acres, with an aggregate wharf frontage of 5,800 feet. The Ballard Pier is being extended 825 feet seaward to form the southern boundary of the area (38 acres) to be reclaimed by the material excavated in the formation of the new docks, and large purchases in the shape of a powerful new dredging-plant and a fleet of capacious steel barges with a special steam-tug for the conveyance of reclamation-material have been made. The area of Prince's Dock has also been extended

on the north ; further facilities for the manganese ore trade have been provided ; new sheds and cranes have been built in the existing docks ; a new unattended light-ship burning Pintsch's gas has replaced the old outer light-ship ; quarters for the accommodation of some of the staff have been built ; and a new steam-tug and launch have been added to the equipment of the port.

Besides the new docks,¹ other important works under contemplation or in progress are the Port Trust railway,² the proposed reclamation between Mazagon and Sewri, and the new bulk oil dépôt at Sewri. The Mazagon-Sewri scheme contemplates the reclamation of 583 acres, with a wharf-frontage of 2½ miles, or roughly an addition of about 4½ per cent. to the area of the island. This work is being carried out by means of powerful suction-dredgers. The area thus reclaimed will provide for the new goods dépôt at Mazagon for the grain and cotton trade and for a new stores-yard for the Great Indian Peninsula railway, which the Trustees have agreed to provide in exchange for the existing railway store-yard at Wadi bandar ; it will also provide for the hay trade, for a new telegraph store-yard, and possibly for a new store-yard for the Bombay, Baroda and Central India railway, in the event of their present yard at Jamsetji bandar (Colaba) being given up. The project, when completed, will form a link in the long-standing scheme for connecting Bombay with Trombay island and closing the Kurla creek which is little better than a marsh at low-tide. The new bulk oil dépôt at Sewri, designed to supersede the former installations, which from their proximity to the docks constituted a danger to shipping and property, have been located, on a site at the extreme northern limit of the Trustees' estates, completely shut off from the harbour on three sides and in close proximity to the harbour branch railway line, with which it is connected by sidings to enable traders to despatch oil direct to their dépôts up-country. The site, which has been acquired, at a cost of 3½ lakhs and laid out at a further cost of 3 lakhs, measures 61 acres, affording room for six separate installations, and is connected with a deep

¹ See Places and Objects of Interest.

² See Vol. I, pages 356-358.

water berth for oil-steamers by a line of cast-iron pipes. The entire cost of the scheme is estimated at 22·2 lakhs, including the cost of a special oil-pier which it may not be necessary to construct, and will be wholly covered by charges on the trade.

The total expenditure on works already completed since June 1873 to the 31st March 1909 amounts to roughly 837 lakhs or 5½ millions sterling, as detailed hereunder :—

Prince's Dock	...	...	90½	lakhs.
Victoria Dock	...	...	120	,
Merewether Dry Dock	...	12	,	
New Docks (preliminaries)	126½		,	
Other works	...	...	488	,

The total capital debt, including the amount charged for expenditure prior to the formation of the Trust, allowing for credit from sales of property, etc., amounts to 786 lakhs, out of which 302 lakhs represent debt due to Government and 484 lakhs are due to the general public under foreshore securities and debenture loans. This debt is due on properties, which are steadily increasing in value, and its repayment is provided for, as already explained, by regular sinking-funds. Since the completion of the Victoria Dock, the entire expenditure has been met by 4 per cent. debenture loans, and the sum originally advanced by Government for the construction of the Prince's Dock has been repaid in the same manner. The debentures are in high favour with the investing public.

The Chairman is assisted in the work of administration by a Deputy Chairman and the staff is divided into six departments, namely (1) the engineering department, consisting of a Chief Engineer, two Deputy Engineers, six assistant engineers and a mechanical superintendent with an assistant, (2) the port department comprising a Port Officer, an Assistant Port Officer and a Harbour Master ; (3) the dock department, comprising a Dock Superintendent with three deputies, and a senior and junior Dock Master ; (4) the traffic department, composed of a Traffic Manager with one deputy, (5) the secretary's department, comprising a Secretary and Chief Accountant, a Deputy Secretary, and a Deputy Accountant and (6) the medical department in charge of a medical officer. The pilot-staff

The St

numbers 20, consisting of 2 master pilots, 6 first grade, 6 second grade and 6 third grade pilots.

Estates and Leases.

The total area of land held by the Port Trust in Bombay on the 31st December, 1909, was 917.83 acres, excluding the Mazagon-Sewri reclamation which measures 554 acres and the land handed over to the G. I. P. Railway Company for the Harbour branch railway. The area held by tenants on leases amounted on the same date to more than 549,000 square yards and realized an aggregate annual rent of 6½ lakhs. The area let on a monthly tenancy was more than 70 acres and produced a rent of more than 5½ lakhs for the year 1909.

The following table shows the distribution over the Port Trust Estate of the area leased, excluding monthly tenancies :—

PORT TRUST ESTATES.						Area held on 31st December 1909 in Sq. Yds.
Elphinstone Estate	...	...	...	...	...
Mody Bay Estate	...	...	...	...	...	154,295
Mody Bay Imperial Estate	...	...	...	...	...	69,106
Sassoon Dock	...	...	...	...	...	5,400
						17,559
						Sq. yds.
Wellington Reclamation.	Building, etc.	91,883	Arcades.	2,754	Mazagon Reclamation	91,642
Kassara Basin (Lease under preparation)						
Tank Bandar	...	...	...	...	...	17,889
Frere Reclamation	...	...	...	...	...	52,177
Sewri Estate (Leases under preparation)	...	...	...	...	...	3,560
						73,291
						73,652
						28,805
						Total Sq. yds..
						549,377

Subjoined is a summarised statement of occupations of Port Trust land as on 31st December 1909.

LEASES.	Area.	Amount of ground rent charged per annum.	REMARKS.
Monthly leases ...	Sq. yds. 342,214	Rs. 507,112	Excluding receipts for casual occupa- tions and broken periods.

LEASES.	Area.	Amount of ground rent charged per annum.	REMARKS.
	sq. yds.	Rs.	
5 year leases ...	8,232	8,277	
10 year leases ..	55,234	43,764	
15 year leases ...	2,384	4,172	
20 year leases ...	1,743	4,043	
25 year leases ...	773	1,340	
50 year leases ...	276,295	1,90,084	The majority of these leases are renewable for an- other 42 years.
50 year leases (under preparation).	20,346	27,612	All the rents not commenced yet.
99 year leases ...	83,858	51,558	
100 year leases ...	512	933	
Total of 5 to 100 year leases...	549,377	6,31,783	

THE CITY IMPROVEMENT TRUST.

The creation of the City Improvement Trust may be described as a direct result of the plague, which broke out in 1896. History.

In the early months of 1897, the Bombay Government, which had long been aware of the insanitary condition of the city, commenced to formulate a comprehensive scheme of urban improvement, designed particularly to insure the better ventilation of densely-crowded areas, the removal of insanitary dwellings, and the prevention of over crowding. In September of that year they laid before the Municipal Corporation and other bodies definite proposals for the establishment of a special improvement trust, constituted on much the same lines as the Bombay Port Trust. The Trust, which was to be composed partly of representative and partly of nominated members, was to be endowed for a long period on certain terms with the use of valuable Government and Municipal properties within the island, was to be subsidized from municipal revenues, and was to be entrusted with the work of (a) making new streets, (b) opening out crowded localities; (c) reclaiming lands from the sea to provide room for the expansion of the city, (d) constructing sanitary dwellings for the poor and (e) provision of Police accommodation. The scheme, having been generally approved by the Municipal Corporation, the Port Trust and the Chamber of Commerce, was

finally legalised by the passing of Act IV of 1898, to which the formal assent of the Governor-General in Council was given on August 30th in that year; and the term of office of the first Trustees commenced by public notification from November 9th, 1898.

Constitution and Staff.

The Improvement Trust Board is composed of fourteen Trustees, including the Chairman, who is executive head of the establishment. Of these, three are nominated by the Local Government, one is elected by the Mill-owners' Association, one by the Port Trustees, one by the Chamber of Commerce, four by the Municipal Corporation, while the General Officer Commanding the Bombay District, the Collector of Land Revenue and the Municipal Commissioner sit on the Board as *ex-officio* Trustees. Since the constitution of the Board in 1898, the office of Chairman has been held in succession by Mr. (now Sir Walter) Hughes, by Mr. S. Rebsch, by Mr. G. O. W. Dunn and by Mr. J. P. Orr.

Working under the orders of the Board and its Chairman are the following officers, each in charge of a separate department:—An Engineer, aided by a deputy engineer and three assistant engineers, a Land Manager with three assistants, a medical officer and a Secretary and Chief Accountant.¹

Special Collector's Court and Tribunal of Appeal.

All properties, of which possession is necessary to the Board in pursuance of their various schemes of improvement, and which are the property of private individuals, are in the first place publicly notified for acquisition by Government and are then acquired by a special officer under the provisions of the Land Acquisition Act I of 1894. At the outset the work of acquisition was performed by the Collector of Bombay; but in consequence of the vast number of properties to be dealt with, a full time officer, with the title of Special Collector, was appointed by Government to cope with the work on August the 13th,

¹ The various departments of the Trust are located in the Improvement Trust Building facing the Queen's Statue, which was commenced in September 1902 and completed in March 1904. The building, which also contains the board-room of the Trustees, was designed by Mr. C. F. Stevens of Bombay. For some time the offices of the Special Collector were located in the building, but owing to pressure of space, they were removed to hired rooms in 1907.

1900. Subsequently, in view of the active progress of the Board's schemes, an additional Special Collector was appointed by Government on September the 2nd, 1902. Although his enquiries into the value of properties under acquisition are modelled to a large extent upon judicial lines, the Special Collector is primarily an executive officer, and in arriving at his decisions is not bound to adhere rigidly to the limits of enquiry binding upon a purely judicial court. To obviate hardship to owners of the properties acquired by him, and to ensure the correct apportionment of compensation among the various parties in intricate and contested cases, the Improvement Trust Act provides for the appointment of a tribunal of appeal, composed of a president and two assessors. The president is a barrister-at-law and the two assessors are members of the engineering profession, one of whom is nominated by Government and the other by the Municipal Corporation. To this tribunal any property-owner, who may be dissatisfied with the Special Collector's award is entitled under certain limitations to appeal, and to it the Special Collector also refers for decision questions of an intricate legal nature which cannot be satisfactorily settled in his court.

By the 31st March, 1909, the Trustees were engaged upon the prosecution of 33 schemes of improvement, including street schemes, reclamation, housing, and police accommodation schemes in various portions of the island, of which twenty-seven have already been sanctioned by Government and are in progress of completion, and the remainder will shortly be taken in hand. These thirty-three schemes contemplate an expenditure of about 658 lakhs. The details are as follows :—

Scheme I.—First Nagpada. An extremely insanitary area of about 75,000 sq. yards, has been completely cleared and laid out with wide roads and convenient building sites, and model chals for the industrial classes have been erected there and on vested lands at Agripada in the neighbourhood.¹

The work
the Trust.

¹ The foundation stone of the first block of dwellings was laid at Agripada on November 9, 1899 by Lord Sandhurst, in the presence of H. E. the Viceroy, Lord Curzon.

Scheme II.—Consists of a new street running from Queen's road to Carnac bridge, which opens up a side passage through a thickly-crowded quarter, clears several very insanitary areas and provides a new thoroughfare for traffic.¹

Scheme III.—Consists of a broad 80 ft. road, running through the heart of the city from Back Bay to Elphinstone bridge near the harbour-properties of the Port Trust. Incidentally sites are provided for the construction of flats for the poorer classes, and several grossly insanitary areas have been cleared.

Scheme IV.—Provides for a much-needed thoroughfare from Back Bay to Cumballa hill and Breach Candy and opens up a large area for the construction of better-class residences.

Schemes V and VI.—Embrace very large areas of land now mostly vacant and low-lying and provide for the expansion of the urban population towards Dadar, Matunga and Sion, the northern portions of the island.

Scheme VII.—Provides for the reclamation from the sea of a large area of ground at Colaba.

Scheme VIII.—Provides for the removal of a very insanitary congeries of buildings in the old Koliwada at Mander and for the re-laying out of the area.

Scheme IX.—Provides a short length of new street extending from Ripon road to Morland road in Byculla.

Scheme X.—Provides for a new street connecting Hornby and Paltan roads, which will afford a new frontage to the Crawford Market.

Schemes XI, XII and XIII.—Provide for new roads opening up the Agricola and Connaught road estates.

Schemes XIV, XVII to XXIX and XXIII to XXVI.—Provide proper accommodation for the City Police force in various parts of the island.²

¹ This street, known as Princess Street, was formally opened by Their Royal Highnesses the Prince and Princess of Wales on Nov. 10th, 1905, at the commencement of their tour through India.

² In the case of Scheme XV (Police hospital at Nagpada) Government decided to lease the land from the Trust and build the hospital themselves. Schemes XXVI and XXVIII (Mahim-Dharavi) and XXII have not yet been prepared.) Schemes XXV and XXXII have not been sanctioned.

Owing to the resumption of various lands this capital debt has been from time to time reduced, and at the close of 1908-9 stood at Rs. 77,66,433. The Board have raised the following loans, all at the rate of 4 per cent. per annum with a currency of 60 years :—

In thousands of rupees. (000s omitted.)

Year		Net receipts excluding dis- count or premises	Sinking fund on April 1st, 1909
1899	Improvement Trust coupon debentures of 50 lakhs ...	48,00	2,23
1901	Improvement Trust deben- tures of 30 lakhs ...	28,57	1,01
1902	Do. of 30 lakhs ...	29,41	84
1903	Do. of 60 lakhs ...	60,15	1,57
1904	Do. of 50 lakhs ...	51,18	69
1905	Do. of 30 lakhs ...	31,69	40
1906	Do. of 20 lakhs ...	20,20	25
1907	Do. of 15 lakhs ...	14,74	9
1908	Do. of 30 lakhs ...	28,89	.....
	Total ...	3,12,26	7,08

The capital at the disposal of the Trust during 10 years was about 324 lakhs and out of this about 320 lakhs were spent in the following manner :—

On management and establishment	30 lakhs.
,, development of Government lands	8 "
,, " of Municipal lands	6 "
,, Police chals for Government and Municipality	6 "
,, acquisition of land	235 "
,, chals, roads and other works	32 "
,, office building	3 "
	320

A special account is kept of rents and other proceeds and of the amount spent on the maintenance of properties. The Trust's income under this head, known as general account, to the end of 1908-9 was 108 lakhs and the expenditure 90 lakhs. The balances from this source have been carried year by year to capital account to meet current capital expenditure. The progress of the receipts

of general revenue (in thousands of rupees) is shown below :—

Year.	Rs.	Year.	Rs.	Year.	Rs.
1898-99 ...	1,57	1902-3 ..	10,35	1906-7 ..	13,92
1899-1900 ..	1,47	1903-4 ..	8,80	1907-8 ..	14,54
1900-01 ..	7,83	1904-5 ..	11,20	1908-9 ..	15,63
1901-02 ..	8,27	1905-6 ..	14,27		

In 1908 the receipts were Rs. 15,62,658 as detailed below :—

Rent of Government lands vested in the Trust under the Act	1,74,073
„ Municipal lands	20,191
„ Additional land given by Government	1,12,031
„ Land leased by Government	201
„ Other lands and buildings vested in the Board	6,27,400
Contribution from Municipal funds	4,50,000
Miscellaneous	1,69,000
	— — —
Total	15,62,658

To aid the Bombay Improvement Trust Government and the Municipality vested in it certain portions of their lands with a view to their development and the enjoyment by the Trust of the resulting rentals. A list of these is given in schedules C. and D. of the City Improvement Trust Act. These grants comprised 3,792,053 square yards valued at Rs. 9,101,551. Some of the lands originally granted have been resumed, and the area now (1909) held by the Trust including 94,00 square yards reclaimed at Colaba measures 3,488,342 square yards as shown below:

	Square yards.
Government Lands	2,642,614
Reclaimed land at Colaba	94,000
Municipal lands	7,36,205
Additional lands given by Government	15,523
	— — —
Total	3,488,342

Trust's
estates and
leases.

Besides these, the Improvement Trust has acquired upto the end of 1922 lands measuring 1,302,000 square yards. Thus the total area of land held by the Trust is 4,096,000 square yards ; the total developed area is 1,200,000 square yards. About 350,000 square yards have been occupied for roads and service passages and about 300,000 square yards are open space.

Land is disposed of either by private negotiation or by public auction. The bid in the case of auctioned plots is for the capital amount per square yard on which rent is to be calculated at 4 $\frac{1}{2}$ per cent. (and in some cases 5 per cent.) per annum. When an offer is accepted, the lessee is required to enter into an agreement with the Board binding himself to construct a building on the land taken up by him within a certain time (10 to 24 months) in accordance with the Board's rules in that behalf and to then accept a lease. The accepted tenant has to pay a certain sum as security for the fulfilment of his contract. In some cases this consists of a sum equivalent to one year's or two years' rent, and in others such sum plus an additional sum of Rs. 2,000. He has also to pay Rs. 500 to meet legal expenses in connection with the agreement and lease. A certain period is allowed to the lessee rent-free. This period varies from six to eighteen months from the date of agreement according to the nature of the building to be erected on the plot ; in most cases it is 12 months.

Rules and regulations have been laid down for the buildings on Trust land, and all buildings erected by the lessees must conform to those rules. Plans and specifications must be submitted to the Board for approval and all construction work must be in accordance with the sanctioned plans. On completion of a building the Trust Engineer certifies to its having been completed in accordance with the Board's rules ; and then a lease for a term of 999 years (in the case of lands temporarily transferred to the Trust from Government or the Municipality 90 years) is granted to the lessee. In some cases, however, the lease is granted before the completion of the building. A lessee may assign his interest in his building with the consent of the Board. Ground rent is payable into the

office of the Secretary in regular monthly or quarterly instalments.

Leases granted or agreed to be granted as on 31st March 1909.

	Area in thousands (sq. yards)	Amount of annual ground rent charged in thousands (Rupees).	Remarks.
Monthly leases ...	83.5	115.1	Rents from vacant lands leased for erecting temporary structures or stocking materials.
Yearly leases ...	1546.0	37.8	Rents for cultivation and produce of lands.
50 years' leases ...	2.5	1.8	
99 years' leases at 3 per cent. ...	0.4	0.2	
99 years at 4½ per cent.	56.0	109.0	At Chaupati and Colaba Reclama-
99 years at 4 per cent.	217.6	177.9	tion.
999 years	85.0	217.0	
Total ...	1991.0	658.8	

APPENDIX I.

*Statement showing income of the Bombay Municipality.
In thousands of rupees (000s omitted.).*

	1871.	1881.	1890-1	1900-1	1908-9
I—Taxation Proper—					
General Tax	11.35	10.59	15.65	28.95	31.47
Contribution from Insurance Companies or Fire Tax ...	...	24	1,25	1,21	1,48
Wheel tax and tolls ...	2.05	2.32	3.57	3.21	4.80
Town duties	4.51	6.37	9.80	11.31	12.96
Licenses	8	1	60	96	1,19
Receipts from Government for liquor licences ...	1.15	1.44	1.44	1.44	1.44
Receipts from Government for tobacco duty	1.28	1.62	1.80	2.17	2.79
II—Services rendered—					
Halalkhore tax	2.00	2.82	5.27	7.14	11.19
Water tax	3.58	5.25	11.49	17.36	20.04
III—Returns from property and miscellaneous.					
Government contribution for Police ... ... ...	...	50	...	...	...
Returns from properties and miscellaneous	2.70	7.58	10.79	10.28	15.50
Total ...	28.70	38.74	61.66	84.03	102.86

APPENDIX II.

*Statement showing expenditure of the Bombay Municipality.
In thousands of rupees (000s omitted).*

	1871.	1881.	1890-1	1900-1	1908-9
General Superintendence	1,23	1,29	1,82	2,28	2,71
Assessment and Collection and Revenue and Refund Audit Departments	1,13	1,52	2,24	3,27	3,74
Fire Brigade	31	29	1,29	1,19	1,72
Public Gardens ... ... ...	...	19	88	70	93
Public Works (Engineer's) Department	16,12	9,17	15,92	17,01	23,93
Public Health Department	7,84	7,98	13,02	21,68	24,34
Police Charges	5,91	3,58	2,58	5,02	...
General Stores	6	...	...	...	29
Education	8	18	69	1,12	2,77
Medical Relief (Hospitals) ... ...	...	20	39	59	4,64
Pensions, Gratuities and Compassionate Allowances	8	9	32	76	66
Contribution to the City Improvement Trust ... ...	...	...	...	4,75	4,50
Plague expenses ... ...	...	...	...	...	2,23
Municipal debt	4,76	7,47	15,52	25,03	32,98
Investments ... ...	...	2,50	32	58	48
Miscellaneous	53	3,53	1,86	1,86	38
Total ...	38,05	37,99	56,85	85,84	1,06,30

APPENDIX III.

Statement showing important original water-works carried out in Bombay during the last 50 years.

Year	Description of work.	Appropriate cost in thousands of Rs.	REMARKS.
1856-60	Vehar lake dams and 32" water main from Vehar to Bombay.	56,00	The works were carried out by the Government of Bombay and afterwards transferred to the Bombay Municipality.
1876-79	Tulsi lake works consisting of a masonry dam, an earthen dam, masonry waste weir, outlet and tunnel works, together with the 24"	37,62	To give high pressure water supply to the properties on Malabar hill and Cumballa hill and Fort and Colaba.

Year.	Description of work.	Approximate cost in thousands of Rs.	REMARKS.
1876—84	water mains from Tulsi to Malabar hill reservoir and an open storage reservoir at Malabar hill. Vehar outlet tower and tunnel at Vehar lake.	2,69	This was undertaken as the old outlet arrangement through the main dam at Vehar lake was supposed to be unsafe.
1880—84	Bhandarwada service reservoir and 6 filter beds	10	To give high pressure filtered water to the city.
1880—85	Malabar hill reservoir and roof and filter bed.	4,13	To filter and store the supply from Tulsi lake.
1884—86	Catch water channels at Tulsi and Vehar.	1,00	To add additional area to the gathering grounds of Vehar and Tulsi lakes.
1882 & 1884—86	Raising Tulsi Dams.	1,13	To increase the capacity of the Tulsi lake.
1884—87, 1889	Purchase of meters for the prevention of waste.	1,44	To detect and check the under-ground leakage in the mains and the wastage through pipes and fittings.
1884—86	Filter beds at Vehar.	1,04	To improve the water supply (filtered) to the northern portion of the city and island.
1884—86	Laying 24" Main from Vehar to Bombay	7,00	
1890	Powai water works.	6,60	Emergency work to guard against a possible water famine, owing to the very low level of water in Vehar lake at the close of 1889 monsoon.
1886—92	Tansa water works.	1,50,00	To improve the city water-supply generally and to give an additional estimated daily supply of 17,000,000 gallons to the city.

Year.	Description of work.	Approximate cost in thousands of Rs.	REMARKS.
...	Covering No. 2 storage basin at Bhandarwada reservoir by constructing filters over it.	135	To construct three additional filters and also to convert the old settling tank into a covered filtered water reservoir.
1903-07	Construction of additional filters at Malabar hill reservoir.	2,50	The existing filters were insufficient to efficiently filter all the water coming from Tulsi.
1884-85	Enlarging different mains.	1,03	To improve the water-supply to the public generally.

APPENDIX IV.

Statement of important drainage works carried out since 1867.

Year.	Particulars.	Cost. Rs.
1867	Sewers in the Fort	Not known.
1867	A main sewer with an outfall into Back Bay	1,45,000
1867	A low level sewer from Bellasis road to Love Grove	Not known.
1870	Brick sewers and pipe sewers in Kamathipura	Not known.
1881	Construction of a new main sewer from Carnac bandar to Love Grove ...	4,90,000
1880	New outfall sewer	2,41,000
1882	Surface drainage of Khetwadi, including three branch drains "	84,000
1883-84	Pipe sewers	3,71,000
1884	Pumping station at Love Grove	1,95,000
1883	Machinery at Love Grove	1,86,000
1884-85	Gowalia Tank, Tardeo and Arthur road storm water drain	1,62,000
1893-94	New plant and engines, including the cost of buildings	4,88,000
1884	Queen's road sewer	1,41,000
1888	Ovoid sewer from the Crawford Market to the Mint	1,90,000
1889	Sewerage of Fort	3,98,000
1891	House connections and pipe sewers in Girgaum	7,95,000
1886	Paidhoni, Bhendi Bazaar and Bellasis road storm water drain	3,00,000

Year.	Particulars.	Cost. Rs.
1886	The storm water reservoir on the Flats.	1,95,000
1886	Ripon road sewer	59,000
1886	Pipe sewers in Agripada	94,000
1888	House connections in Khetwadi ...	72,000
1895	Sewerage of Colaba	8,64,484
1895	" Umarkhadi	3,49,959
1897	" Malabar and Cumballa hills	1,57,026
1898	" Portion of old race course district and Bapty road ...	40,815
1898	Improvement of the side drains with masonry gullies in Khetwadi district...	52,486
1898	Sewerage of Fergusson road and Chinchpugli (gravitation) ...	81,617
1898	Storm water drain with man-holes and water-gullies from Wellington fountain via bandstand to the sea ...	37,355
1899	Construction of storm-water drains in the Kamathipura district ...	91,805
1899	Sewerage of Mazagon (gravitation) ...	3,32,651
1901	" " sectional district	3,30,072
1901	Machinery for the sewerage of Parel, Mazagon &c., sectional district ...	8,77,625
1901	Storm-water drain in Tardeo road ...	1,77,607
1903	Sewerage of Parel district (Shone System)	6,19,062
1903	" Fergusson road and Chinchpugli (Shone system).	3,30,008
1905	Extension of 15" sealed main in Fergusson road from the culvert to Varli road ...	11,333
1906	Sewerage of Agripada district ...	1,21,114
1906	Low level channels from Tardeo flats to Varli point	13,72,120
1907	Sewerage of Malabar hill, sub-district No. 1	3,19,439
1907-09	Storm-water drains in roads converging toward Jacob's Circle	2,33,000
1907-09	Low level channel from Varli road to Dadar road	2,48,616
1907-09	Sewerage of Malabar hill sub-districts 2 and 3	3,29,049

APPENDIX V.
List of Municipal Markets.

Name	Locality.	Area in square yards.	Cost (present estimated value)	R.	S. T. L.				Receipts Rs. 1,855
					Fruit	Vege- table	Flow- ers	Fish, ton	
Colaba Market ..	Thomas street ..	1,895	1,467	1,22,630	12	..	..	62	7
Fent Market ..	Mint road ..	1,89	1,104	1,12,60	18	21	6	150	9,517
Arthur Crawford Market	Hornby road ..	1,663	6,9-6	19,19,700	137	58	4	250	1,03,052
Erukine road Market ..	Erukine road ..	..	5,112	4,61,900	216	11	44	100	307
Bhuleshwar Market ..	Bhuleshwar road ..	1,897	1,516	3,93,562	131	18	22	..	59,103
Pedder Market ..	Dockyard road ..	1,893	11	70,000	16	..	..	..	13,651
Furns road Market ..	Furns road ..	..	..	..	10	..	50	10	2,005
Perik Market (Sonapur) ..	Lohar street ..	..	..	..	..	..	..	..	1,413
DeLisle road Sheep Market ..	DeLisle road ..	1,891	25	25,000	..	..	..	..	100
Ferguson road Market	Ferguson road ..	1,896	500	6,8,21	11	..	..	75	3,140
Patthabevi Market ..	Patthabevi road ..	1,908	..	..	14	2	..	..	2,0,6
Elphinstone Market ..	Elphinstone road ..	..	..	..	33	..	..	..	2,510

APPENDIX VI.

List showing the situation, area and other particulars of the burial and burning grounds in Bombay Island.

No.	Situation.	Approximate area in sq. yds.	Community to which devoted.	Remarks.
1	Golkongi hill, Sewri	... 80,238	Episcopalian, Presbyterian and Roman Catholic.	and Sewri Cemetery, Burial.
2	Malabar hill	... 5 Towers and one chotra.	Parsi	Towers of Silence.
3	Portuguese Church road, Lower Mahim.	375	Roman Catholic under the jurisdiction of the Archbishop of Goa.	Burial.
4	Ditto	1,493	Ditto	Ditto,
5	Grant road, north and south side	..."	Beni-Israel	Closed.
6	Grant road, north side...	" 17,831	Konkani Muhammadan	Ditto.
7	Dharavi, west side of Matunga and Sion road.	" 40,898	Roman Catholic, under the jurisdiction of the Archbishop of Goa.	Burial.
8	Tarwadi near Dharavi	30,736	Muhammadan Sunni	Ditto,
9	Ditto	..."	Jewish	Closed.
10	Queen's road	... 4,431	Hindu, except low caste	Sonapur, Burning and Burial.
11	Foogla Tandel street	..."	Shia Khoja	Burial.
12	No. 9, Malabar hill road	2,856	followers of H. Agra Khan.	Burial.
13	Thakurdwar and Queen's road	16,095	Parsi ; the Dadysett family	Tower of Silence under the special sanction of the Hon. J. Duncan, Governor of Bombay.
14	Vaali Moti, Valkhadi	5,333	Muhammadan Sunni	Registered in 1891.
15	Sewri road	5,942	Hindu, except low caste	Burning and Burial.
16	Upper Colaba near Light-House	4,210	Konkani Muhammadan	Ditto.
17	Golanghi hill	273	Hindu-Agri	Burial.
18	Clerk road	..."	Hindu low caste	Burning and Burial.
19	Haines road, corner of Mahalakshmi road.	Ditto	...	Closed.
		..."	...	Not in use now.

APPENDIX VI.

List showing the situation, area and other particulars of the burial and burning grounds in Bombay Island.—cntd.

No	Situation.	Approximate area in sq. yds	Community to which devoted.				Remarks.
			Jewish	Prostitutes	... Hindu	Burial.	
20	Matunga ...	...	...	...	...	...	...
21	Tank Bandar road	...	...	...	...	...	...
22	Varli Matharpakhadi	...	...	...	...	...	Burning and Burial.
23	Queen's road	...	...	...	...	...	Ditto.
24	Matunga, part of the old English cemetery.	...	...	...	...	...	Burial.
25	Queen's road	...	...	...	...	...	Ditto.
26	Valkeshwar sea-shore	...	...	...	...	...	Burial.
27	Matunga ...	...	...	...	...	...	...
28	Varli sea-shore, north-west of Koliwada.	...	...	...	...	...	Ditto.
29	Varli sea-shore, south-west of Koliwada.	...	...	...	...	...	Ditto.
30	Mangalwadi	...	...	...	...	...	Ditto.
31	Old Sonapur lane, north side	...	...	...	...	...	Ditto.
32	Dharavi road	...	...	...	...	...	Ditto.
33	East of Bhoiwada village	...	...	...	...	...	Burial.
34	East of Patel tank	...	...	...	...	...	Ditto.
35	Charni road	...	...	...	...	...	Burial.
36	East of Govvari village	...	...	...	...	...	Ditto.
37	Patel Tank road, east side	...	...	...	...	...	Burial.
38	Mahim ...	...	...	...	...	...	Ditto.
39	Mori road, Mahim	...	...	...	...	...	Burial.
		...	...	...	...	...	Ditto.

APPENDIX VI.

List showing the situation, area and other particulars of the burial and burning grounds in Bombay Island.—concl'd.

No.	Situation,	Approximate area in sq. yds.	Community to which devoted.	Remarks.
72	Tank bandar, Mount road	5,000	Ashra Ashari Khoja	Burial.
73	Natunga Leper Asylum compound	888	Hindu	Burning.
74	Varli	"	Ditto	Burning and Burial.
75	Narielwadi, Victoria road	10,320	Momin Musalman	Burial.
76	Narielwadi, at the junction of Mount and Victoria roads.	300	Daudi Bohra	Ditto.
77	Antop hill	19,528	Babi	Ditto.
78	Haines road	1,180	Dheds and low-caste	Ditto.
79	Ditto.	1,000	Japanese	Burial.
80	Digit tank, Matlim	.....	Sunni Musalman	Burial.
81	Antop hill, Matunga	4,000	Dito and Khatris	Ditto.
		19,358		...

CHAPTER XI.

EDUCATION.

THE early history of education in Bombay is mainly a record of Christian missionary enterprize.¹ At the close of the sixteenth century, for example, the Franciscan fathers maintained three parochial schools for catechism and rudimentary instruction in Latin and Portuguese, of which one was attached to the church of Nossa Senhora da Esperanca (built in 1596), a second to the church of Nossa Senhora de Gloria in Mazagon, and the third to the church of Mahim.² After the cession of the island to the English, the first educational institution founded was a charity school, opened by the Reverend Richard Cobbe, chaplain of St. Thomas' church (now the Cathedral), in the Fort in September, 1718, with the object of "educating poor (European) children in the Christian religion, according to

Early account.
1600—1840

¹ Most of this article was supplied by Mr. R. S. Taki, Deputy Educational Inspector, Bombay.

² This was connected and perhaps identical with the so-called Mahim College, which was abandoned about 1810 and was finally demolished in 1851. It stood on the verge of a large tank in the middle of the Mahim cocoanut woods, and consisted of halls for study, a refectory, private apartments and dormitories, built in the form of a square, with a fine open courtyard in the middle, from which massive flights of stone steps led up to the four sides of the building. At the zenith of Portuguese dominion it ranked as the chief Portuguese college in Western India; but was subsequently transformed into a seminary for Portuguese youths.—Bombay Times, October 22nd, 1851, and Lady Falkland's Chow-Chow, 1848.

Nearly three centuries before the English missionary societies commenced to labour in Bombay, and more than a hundred years before the island of Bombay was ceded to the English Crown, the Portuguese had founded an orphanage at Montpezier in Salsette for the maintenance and education of destitute native children. The institution flourished for upwards of two centuries; and its church and ruined walls are still standing. Other similar establishments were founded about the same time in the neighbouring islands of Agasaim and Karanja (Uran); and in 1556 a large orphanage for 130 boys was established near Thana, at a village which was situated in the valley now covered by the Vehar lake. All of these orphanages gave an elementary education in Portuguese and Latin, and to this was added instruction in agriculture and other industrial work.

Towards the end of the sixteenth century, the Franciscan and Jesuit orders maintained at Bombay and on the adjacent islands a considerable number of parochial elementary schools which were

the use of the Church of England."¹ Under his auspices the inhabitants of Bombay "raised among themselves Rs. 6,000 and upwards, without stirring out-of-doors; of which the Governor (Charles Boone) according to his usual generosity launched out Rs. 2,000, leaving a blank for the Honourable Company in hopes of their assistance."² For nearly a century from that date the school was entirely supported by voluntary subscriptions, but in 1767 received from Mrs. Eleanor Boyd a legacy of Rs. 6,000, which, lying at interest in the East India Company's Treasury for 57 years, accumulated to Rs. 46,000. In 1807 therefore the Court of Directors took the school under their own

slightly inferior in grade to the orphanages. Colleges for higher instruction also were established at Bassin, Thana, and Chaul. In the institution at Bassin, which was founded in 1548 and had a theological seminary attached to it, a high order of education was given gratuitously to upwards of 200 students. Dr. John Fryer, who visited Bombay in the year 1674 and saw these flourishing establishments, describes their collegiate buildings as being not unlike those at the English universities, and he adds that the Bassin college had an extensive library of historical, moral and expository works.

On the expulsion of the Portuguese by the Marathas in 1739, and the suppression of the Catholic orders, the orphanages and colleges were all broken up. But the parish schools, which evidently supplied a public want, survived, and were carried on by the native clergy with the aid of private liberality. An attempt was made by Sir Miguel De Lima towards the end of last century to establish a college at Bombay, but it failed; it was not until the return of the Jesuits to Bombay, shortly before the foundation of the Bombay University, that the re-establishment of a complete system of schools was successfully taken in hand. In 1795 a school was founded by Antonio de Souza for the free education of the Roman Catholic children of Mazagon, the cost being defrayed from the interest on a sum of Rs. 40,000 which he gave to the Trustees of the church of Our Lady of Glory. At the outset this school taught only Portuguese and Latin.

¹ The Church of Bombay by the Reverend R. Cobbe. The success of this school was probably responsible for the Court of Directors recommending to the Bombay Government in 1752 "the setting up and establishing of charity schools wherein the children of soldiers, mariners, topasses, and others, might be educated, as well of the subordinates as at Bombay." A subsequent order laid down that "bastards, and the children of slaves on one side, should be admitted, provided the other children would mix with them." Bombay Quarterly Review II.

² *Ibid.* Richard Cobbe was appointed Chaplain of Bombay through the influence of Humphrey Prideaux, the well-known Dean of Norwich, but returned to England in 1720 in consequence of a quarrel with the Bombay Council on the subject of a supposed insult which he had put upon Mr. Braddy (Bombay Quarterly Review III). His son was chaplain to Admiral Watson in India (Ives' Voyages, 1754-56).

management, allowing it an annual grant of Rs. 3,600; and finally in 1815 handed it over, together with a fixed annual grant of Rs. 5,280, which has now been exchanged for an annual grant equal to one-third of the expenditure on the two Byculla schools, to the "Society for promoting the education of the poor within the Government of Bombay," which was founded in that year (1815) and is now known as the Bombay Education Society. This Society, the first of its kind in India—received nearly a lakh of rupees in benefactions during the first five years of its existence, and was warmly supported by the national society in England. It did not confine its efforts to the education of European children, and its operations extended beyond the island. Native boys were encouraged to attend schools and by 1820 the Society had opened four schools for natives in the island, attended by about 250 pupils. In August of that year it formed a separate branch known as the Elphinstone Native Education Institution, the object of which was to prepare school-books in the vernacular languages and to aid or establish vernacular schools. Two years later however (1822) the Society, finding itself unequal to the discharge of rapidly increasing responsibilities, determined to confine itself solely to the education of European and Eurasian children, and therefore severed itself from the Elphinstone Native Education Institution, which thenceforth provided for the education of the Native population under the title of "The Bombay Native School Book and School Society."¹ The latter society soon rose into prominence,² becoming in 1827 the Bombay Native Education Society and being merged in 1840 in a Board

¹ The Bombay Education (or parent) Society still maintains two large schools at Byculla. One of the scholarships now open to pupils of the schools is known as the Barnes' Scholarship in memory of the famous Archdeacon of Bombay (1815-1845), through whose exertions the Society was founded in 1815. The Archdeacon was also a Vice-President of the Native Education Society; and in 1833 Mr. Framji Cowasji presented the Society with a portrait of the Archdeacon as a memorial of his zeal.

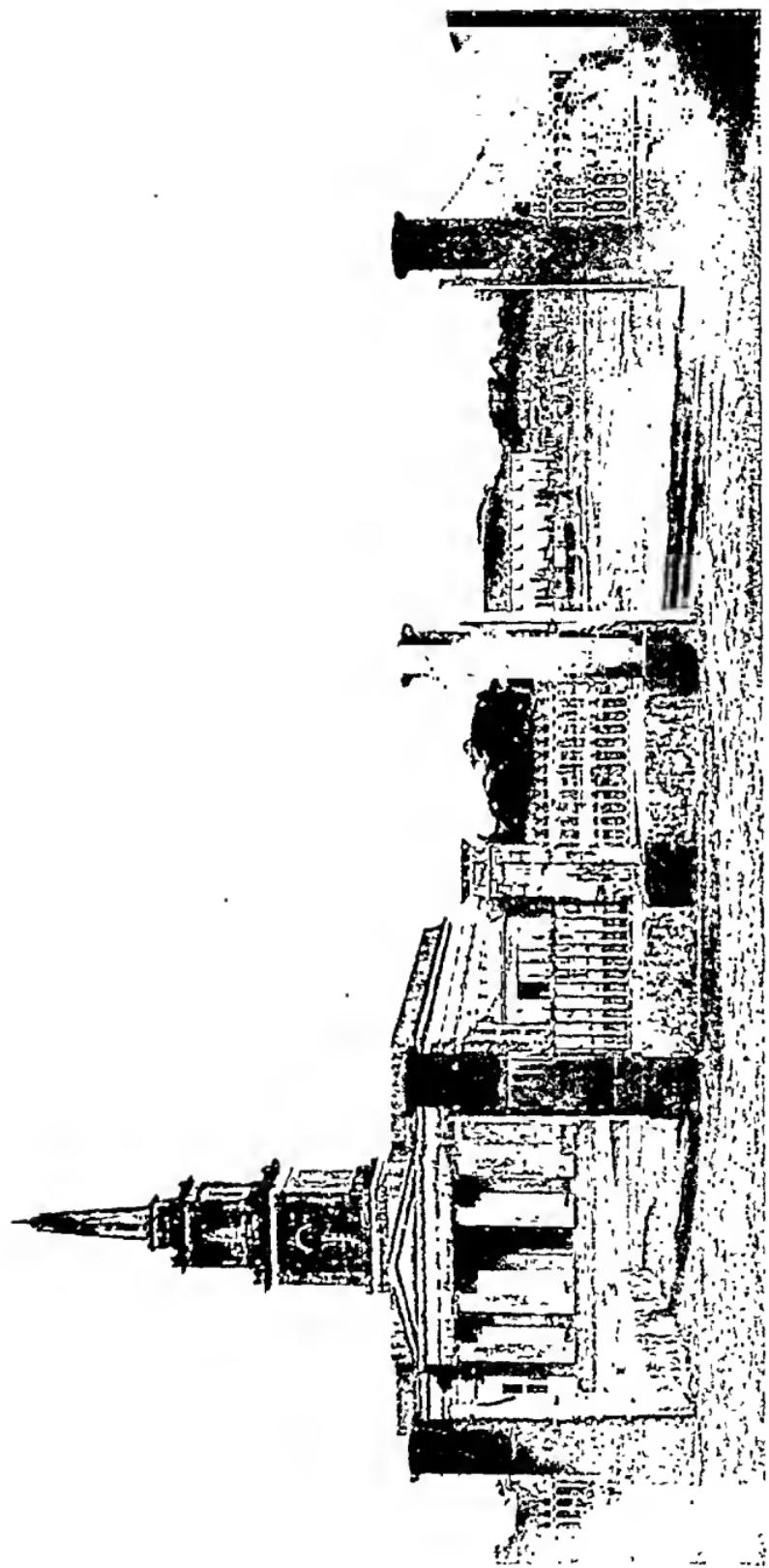
² The Honorable Mountstuart Elphinstone was the first President of the Society. The Vice-Presidents were the Chief Justice and three Members of the Executive Council of the Bombay Government. The Managing Committee was composed of 12 European and 12 Native gentlemen, with Captain George Jervis, R. E., and Mr. Sadashiv Kashinath Chhatre as Secretaries.

of Education ; and down to the year 1855 it shared with missionary bodies from Europe and America the entire burden of educational administration in Bombay.

The earliest missionary workers in the field of education were members of the American Marathi mission, who arrived in Bombay in 1813 and opened in May 1815 a Hindu boys' school—the first school conducted on western lines in this part of India. This was followed by the opening in 1824 of a girls' school ; and by 1826 they were enabled to report an increase of 9 girls' schools, attended by 340 pupils, and in 1829 by 400 pupils, of whom 122 were able to read and write and do plain needlework.¹ In 1831 the mission maintained eight boys' schools and thirteen girls' schools, attended by 760 pupils ; but commenced from that year to relinquish gradually its work in Bombay in favour of the new educational centre at Ahmadnagar. Meanwhile, the Church Missionary Society had also appeared in the field, opening their first school and commencing the compilation of a series of moral class books in 1820. In 1826 they opened a school for native girls, and in 1835 founded an anglo-vernacular school in memory of Robert Cotton Money, Secretary to Government (in the Educational Department) ² raising for that purpose funds which sufficed also for the erection in 1857 of the building which stood until 1909 on the verge of the Esplanade. The schools of the Society steadily advanced up to the year 1840, when in consequence of the baptism of two pupils, the number on the rolls suffered a sudden and considerable reduction ; but the effect of this action was only temporary, for by 1852 the Robert Money school contained more than 400 pupils, and the Society's vernacular schools were attended by 670 boys and nearly 400 girls. A later comer was Dr. John Wilson of the Scottish Missionary society, who, assisted by Mrs. Wilson, established in 1829-30 six schools for native girls, the

¹ One of these institutions was a boarding-school which was successfully maintained at Byculla for several years. The Governor of Bombay and many high officials subscribed liberally to the American Marathi Mission School funds.

² Robert Money had been a benefactor of the society and Secretary to the Native Education Society.



BYCULLA CHURCH, 1864.

attendance in which soon rose to 200. In 1832 Dr. Wilson opened a school for boys, financed by local contributions, in which both English and vernacular languages were taught, and which, after re-organization by the Church of Scotland in 1838, formed the nucleus of the Free General Assembly's Institution.

Meanwhile the Bombay Native Education Society maintained a steady progress. In 1824 they purchased a plot of ground for erection of a central building to accommodate their English and vernacular schools;¹ they appointed a European head master to the English school in the following year, and in 1825 despatched twenty-four trained masters from the vernacular schools to take charge of primary schools in the Konkan, the Deccan and Gujarat. They even formed in 1825 an engineering class, under the superintendence of Captain Jervis, with the object of "preparing a body of men to act under the officers of Government in superintending surveys and buildings, and of providing for a more general diffusion of mathematical and physical knowledge, as well practical as mechanical, among the native subjects of this Presidency, in their own vernacular dialects."² Their success, both tutorial and financial, was largely due to the encouragement given by the Honourable Mountstuart Elphinstone, who was an advocate of higher as well as vernacular education, and who had won the entire confidence of the native community; and it is therefore hardly a matter for surprise that, when he relinquished the reins of office in 1827, the Native Chiefs of the Deccan and Konkan and the public subscribed more than 2½ lakhs, which subsequently accumulated to nearly 4½ lakhs of rupees, to found a Presidency College in his memory. He himself was requested to select the first Professors—Messrs. Harkness and Orlebar—who arrived from England in 1835, while the

¹ Heber's Narrative—"On May 5th (1825) the foundation of a free school on the same plan with that of Calcutta was laid. The ceremony was numerously attended, and the institution, which has been for some time in activity, though in a hired and inconvenient building, appears very flourishing. The plan and elevation of the intended schools by Lieutenant Jervis of the Engineers, I think a very elegant and judicious one." See also Von Orlich's Travels, Vol I (1845).

² Bombay Quarterly Review II.

Bombay Government undertook to superintend the general maintenance of the college and to defray all expenditure in excess of the income derived from fees and endowment funds.¹ This system of dual control by Government and the Society, however, did not make for success, any more than did the plan, adopted in 1832, of placing the district schools of the Society under the control of Government revenue officers; and it was soon apparent that, unless a special agency was created for the supervision of schools, the management of such institutions by Government was bound to be faulty. In view of the past accomplishments of the Native Education Society in the cause of education, and of the fact that their central English school in Bombay had attained a high standard of excellence under Messrs. Henderson and Bell,² Government decided in 1840 to amalgamate the school and college classes into one institution, named the Elphinstone Institution, and to place them under the control of a Board of Education, composed of a President and three European members appointed by Government and three native members

¹ The amount of this subsidy was Rs. 22,000 a year, and was continued to 1863. For further particulars of the College, see the article on Elphinstone College.

² Mrs. Postains' Western India in 1838, Vol. I, page 48 *et seq.*—"The Schools are situated near the great bazaars at the extreme end of the Esplanade. Committees and examinations are held in the library, a splendid apartment fitted with a good collection of useful works, globes, maps and adorned at either end with full-length portraits of the great benefactors of the institution, Sir John Malcolm and the Honorable Mountstuart Elphinstone. The lads vary in age from seven to twenty, the classes being composed mainly of Hindu and Parsi students, including a few Portuguese boys, but not one Mahomedan. The sons of tradesmen or any below the caste of a Parvoe (Prabhu) or writer are not admitted. The branch schools form one of the most important parts of the Institution. The students sit cross-legged on carpets with huge tomes resting upon their knees. The fame of the Native Education Society's Schools has spread far and wide and in truth very deservedly." The education of European and Eurasian children seems to have been carried on in more than one private school at this date. The Bombay Times of November 3rd and November 28th, 1838, contains advertisements of a day-school for both sexes in Medows street, and of a new English school "adjoining the Sailors' Home near Dhobees' Tank (Dhobi Talao), for the children of Indo-Britons and other Christian inhabitants of Bombay," owned by the Reverend G. Candy. The latter school formed the nucleus of the modern Indo-British Institution.

appointed by the Native Education Society, which thenceforth disappeared from the educational arena.¹

Until the State recognized the need of a properly organized department of Public Instruction, this Board of Education was responsible for the whole educational administration of the Bombay Presidency, and was in direct charge of the schools in Bombay island, which comprised in 1840 the Elphinstone Institution and seven vernacular schools. Their first step was to divide the Presidency into three educational divisions, each under a European Inspector with one Native assistant; and this was followed by the establishment of school-committees and stipendiary studentships, by the institution of an entrance-test for English schools, and by the revision of fees and the provision of free studentships for poor pupils from vernacular schools. They also founded a normal class, which languished on the death of its first Director, Bal Gangadhar Shastri, and was abolished about 1848. In 1844 they added to the upper division of the Elphinstone Institution a surveying and civil engineering class under a professor chosen in England by the Court of Directors; and in 1846 appointed a Professor of Botany and Chemistry; while at the same time they re-organized the school-book depositories in Bombay, and appointed a special committee for the preparation of English and vernacular text-books. The Board also received control of the Grant Medical College, founded in 1845. The funds of the Board consisted chiefly of a Government subsidy of Rs. 1,45,000, including a contribution of Rs. 22,000 to the Elphinstone Institution, and of Rs. 2,756 to the West and Clare scholarship endowments. The most notable President of the Board was Sir Erskine Perry, Chief Justice (1843-52), whose encouragement of higher education involved a deviation from the previous tendency of the educational movement in Bombay, and whose policy so stimulated private enter-

The Board
of Education
1840-55.

¹ The first members of the Board of Education were Sir J. W. Awdry, Messrs. Bruce, Morris (Secretary to Government), Dr. J. McLennan (afterwards Physician-General in Bombay) and Messrs. Jagannath Shankarsett, Mahomed Ibrahim Makba and Jamsetji Jeejeebhoy.

prise that by the end of his tenure of office nine private English schools were being maintained by their promoters in the capital of the Presidency. Besides these there were 17 indigenous schools in the Fort, of which twelve belonged to Hindus and five to Parsis, and 75 vernacular schools outside the limits of the Fort, including both Government, missionary and indigenous institutions. The total number of boys receiving English or vernacular education was reported to be 5,809.¹ "The indigenous schools were chiefly owned by so-called *Mehetajis*, penurious men of limited intellect, who held their classes on the verandah of a house, free of rent. Chairs and tables were unknown, and very few pupils possessed slates or pencils, their place being supplied by a portable wooden board, on which the pupil wrote with a reed pen dipped in chalky fluid, and which was re-painted every Divali by the *Mehetaji* for a small consideration. The *Mehetaji* exercised unlimited power within his own domain. Not only did he oblige his elder pupils to sweep the school premises every morning, but in cases of misbehaviour he subjected the boys to several most ingenious modes of punishment, such as standing in a bent position for an hour with their fingers touching their toes. The arrival of a new pupil was the occasion of a regular initiation ceremony, in which the *Mehetaji*, after being garlanded at the house of the boys' parents, headed a procession back to the school, amid the chanting of hymns to Ganesh, the god of knowledge. This was followed by the distribution of inkstands and sweetmeats to the pupils, who observed the remainder of the day as a holiday. Bombay also contained a few private academies of an exclusive character, attended by the sons of the rich, in which the fees were high, discipline was lax, and the pupils studied or not according to their own fancy."²

¹ Lady Falkland writing (*Chow-Chow*) in 1848 remarks:— "There are several other admirable schools and institutions for purposes of education; some supported by Government, or by the various missionary bodies, others supported by Natives amongst which latter are some very large Parsi schools."

² The late Mr. K. N. Kabraji's Reminiscences, reprinted in the *Times of India*, 1901.

On Sir Erskine Perry's retirement¹ from the Board in 1852, a reaction took place in favour of primary education, and the Government subsidy was increased to $2\frac{1}{2}$ lakhs, whereupon the Board undertook to open a school in any village of the Presidency, provided that the inhabitants were prepared to defray half the salary of the master and to provide a school-room and class-books. In fact, with the exception of girls' schools, which were relegated entirely to private enterprise, the Board may be said to have founded a system of education which in many respects anticipated the principles of the famous Despatch of the Court of Directors in 1854.² They had prepared the way for an University by the establishment of institutions for the teaching of literature, law, medicine and civil engineering, and had introduced a system of primary schools, administered by the State but mainly supported by the people themselves, which formed the germ of the modern local-fund school system.

At the time of the transfer of the functions of the Board to the Director of Public Instruction (1855), the number of Government institutions in Bombay island was ten, namely, the Elphinstone Institution and two branch schools,

The Educational Department,
1855-65.

¹ When Sir Erskine Perry was about to leave India altogether, the Perry Professorship of Jurisprudence at the Elphinstone College was founded by public subscription, in memory of his long connection with law and education in India.

² The Despatch laid down that "Among other subjects of importance, none can have a stronger claim on our attention than that of Education. It is one of our most sacred duties to be the means, as far as in us lies, of conferring upon the Natives of India those vast moral and material blessings which flow from the general diffusion of useful knowledge, and which India may, under Providence, derive from her connection with England". The measures prescribed for the attainment of this object were, (a) the constitution of a department of Public Instruction; (b) the foundation of universities at the Presidency towns; (c) the establishment of training-schools for teachers; (d) the maintenance of the existing Government colleges and schools of a high order and the increase of their number when necessary; (e) increased attention to all forms of vernacular schools, and (f) the introduction of a system of grants-in-aid, which should foster a spirit of reliance upon local exertion, and should, in course of time, render it possible to close or transfer to the management of local bodies many of the existing institutions.

³ These two branch schools, one in the Fort and the other at Mumbai Devi, were opened in August, 1850, and were considered as preparatory schools to the Elphinstone Institution. As the building, in which the central Marathi and Gujarathi schools were

attended by 961 pupils and costing nearly Rs. 55,000 a year ; six vernacular schools attended by 560 pupils and costing Rs. 3,900 a year ; and the Grant Medical College, with 71 pupils, which was founded in 1845 and cost nearly Rs. 28,000 a year. The chief private institutions at this date were the Bombay Education Society's boys' and girls schools, the Indo-British Institution, the Bombay Scottish Orphanage, the St. Mary's Institution, the Convent School at Parel, the Sir J. J. Parsi Benevolent Institution, several schools of the American Mission, the Robert Money School and 12 vernacular schools belonging to the Church Missionary Society, and the Scottish Missionary Society's schools. Sectarian education was represented by the Prabhu seminary and a Bhattia school, attended also by Khojas, Memons and Lohanas, while female education, apart from missionary effort, was stimulated by the Students' Literary and Scientific Society, which supported nine vernacular free schools for girls,¹ attended by 654 pupils, of whom 136 were Marathi-speaking Hindus, 120 Gujarati Hindus and 398 Parsis. Muhammadan education was represented by only one Hindustani school, opened by Government in Kazi street in 1834 ; for the bulk of the Muhammadan population evinced no ardent desire for education on western lines and were quite content with the ability to read or recite the Koran.²

located, was let by the owner for the Small Cause Court, these schools were removed in 1854 to a building in Cavel; and as the latter building was large enough to accommodate the Paidhoni Gujarathi school also, the latter was closed, thereby reducing the number of vernacular schools from seven to six. The policy of the Board was against Government support of primary instruction at the Presidency, on the grounds that such instruction might safely be left to private enterprise. But in deference to the wishes of the bulk of the native community, the Board restrained from closing the two schools above mentioned. (Last Report of the Board of Education.)

¹ The formation of this Society was promoted by Professor Patton of the Elphinstone College in 1848. It was intended by the students and assistant teachers of the Elphinstone institution to be a mutual improvement society and to aid the dissemination of knowledge by means of vernacular lectures and the publication of cheap periodicals in the vernacular languages. In 1848 the Society maintained 16 schools with 1,132 pupils, including several female schools with 120 pupils.

² An honourable exception was Mahomed Ibrahim Makha, a Konkani Muhammadan, who was elected a member of the managing committee of the Native Education Society in 1822.

The orders of the Government of India on the despatch of 1854 were received by the Bombay Government in February 1855 ; and three months later the Department of Public Instruction was formed, with Mr. C. J. Erskine, C.S., as its first Director and Dr. Harkness, Principal of the Elphinstone College, as first Educational Inspector of the Presidency. The inspection of the vernacular schools in the island was entrusted to the Deputy Educational Inspector of the Thana and Kolaba Districts, Rao Bahadur V. N. Mandlik. Mr. Erskine's first act was the preparation of an inspection-code and the formulation of rules, prescribing the conditions under which grants were to be payable to private schools and providing for a system of stipendiary scholarships. He further instituted an entrance test for higher primary and for secondary and collegiate institutions, and was about to deal with the question of augmenting the number of trained masters for vernacular schools, when ill-health forced him to resign office. His successor, Mr. Howard (1855-65), the Remembrancer of Legal Affairs, confined his attention mainly to the consolidation of the departmental system, to preparing the colleges and higher schools for the University and to securing the voluntary aid of the people in the improvement rather than the extension of primary schools. He also formed a vernacular class-book committee for the improvement of the school-books produced by the departments of the Marathi and Gujarathi translators. In 1856 a Deputy Educational Inspectorship of Gujarathi schools was created ; but, owing to the Mutiny of 1857, which closed the public coffers to all except war-claims, and to the seven lean years which followed it, no provision could be made until 1865 for other wants which Mr. Erskine had declared to be urgent. Among educational institutions other than schools, founded during Mr. Howard's regime, were the Government Central Museum (now the Victoria and

became a member of the Elphinstone College Council in 1834, and a member of the Board of Education in 1840. He published several works for the benefit of his co-religionists, receiving on one occasion the marked approval of the Court of Directors, and was instrumental in popularising the first Muhammadan school opened in 1834.

Albert Museum), the David Sassoon Industrial and Reformatory Institution, the Sir Jamsetji Jijibhoy School of Art, which commenced with drawing-classes in Elphinstone High School, and the University of Bombay, which held the first Matriculation examination in October 1859. In 1861 a Marathi class was opened in the Grant Medical College, which, together with a Gujarathi class opened in 1874-75, formed the nucleus of the existing medical school at Poona and Ahmadabad.

Mr. Erskine's scheme for differentiating the several grades of educational institutions by means of entrance tests was not fully carried out until 1865-66, when the Government colleges found themselves strong enough to restrict their lectures to students who had passed the Matriculation examination of the University. Owing also to the increased efficiency of the high schools, it was found possible to enforce an entrance standard and give a definite aim to the studies of the schools of the next lower grade, in connection with which Mr. Howard organized a system of open exhibitions or scholarships to high or first-grade schools. The distribution of English schools underwent some modification by the opening of the Jagannath Shankarsett school in 1857 and of the Goculdas Tejpal high school in 1858, both of which were established on a system similar to that of the partially self-supporting schools, the founders contributing half the salary of the master and providing the school-house and furniture, while Government paid the balance of the master's salary. In 1858-59 an English class was opened in one Marathi and one Gujarathi school, thus giving rise to the modern second-grade anglo-veracular schools, while the vernacular schools proper were subdivided into superior vernacular schools and village schools. In the former the boys of the first class studied the complete series of vernacular reading books, were well-versed in arithmetic and knew something of geography and history, while in the latter reading, writing, simple arithmetic and elementary geography only were taught. On the introduction of the Public Service Certificate examination in 1866, the superior vernacular schools commenced to teach up to the 2nd class certificate, which qualified for Govern-

ment employ, while inferior schools confined their tuition to the entrance standard for English schools. By 1862-63 Bombay contained 3 second-grade Anglo-vernacular schools, 3 superior vernacular schools, and 6 village schools, and the period under review also witnessed the opening of several private institutions, notably the Fort and Proprietary high schools, the Framji Nasarwanji Patel anglo-vernacular school at Khetwadi, the Jacob Sassoon free school and the Breach Candy road English school.

The extension of primary education on the partially self-supporting system was continued by the Educational Department until the middle of 1858, when the Government of India pointed out that this practice was inconsistent with the terms of the Despatch of 1854, directing that the education of the masses should be promoted by subsidizing indigenous schools. The Bombay Government in reply pointed out that the system of partial self-support was practically the same as the grant-in-aid system, the sole difference being that under the former system Government assumed regular control over the appointments and actions of the masters and thus afforded the public a substantial guarantee that their contributions would be properly expended. The Supreme Government, while acquiescing in this view, ordered that no new schools of this class should be opened without their sanction, and thus virtually stopped the extension of primary education, and obliged the Educational Department to confine its activities to the consolidation and improvement of existing schools. Towards the spread of female education the Department still did little; and it was left almost entirely to private enterprise and benevolence to found schools for the weaker sex. Among the most notable institutions privately endowed prior to 1865 were the Parsi girls' school opened in 1858, convent schools in the Fort, Byculla and Lower Mahim, the St. Joseph's schools at Mazagon and Cavel, St. Anne's school at Byculla, the Sir Cowasji Jehangir Readymoney school at Khetwadi, the Alexandra Native Girls' English institution, founded in 1860, and a Marathi School for Hindu girls opened by the Society for the Propagation of

the Gospel in 1864. Physical education also was first provided for during these years by the opening in 1858 of a gymnastic institution, which subsequently expanded into the present Sir Dinshaw Manockji Petit Gymnastic Institution on the Esplanade.

1865-1872. The year 1865, in which the one-anna cess for local education and improvements was first levied, witnessed the appointment of Sir Alexander Grant as Director of Public Instruction and the creation of a Deputy Inspectorship of Marathi schools in the island. The administration of both Sir Alexander Grant and his successor, Mr. J. B. Peile, C.S., resulted in a considerable increase of resources and in general educational progress.¹ For example, the one-anna cess, which was at first levied as a voluntary rate, was made compulsory in 1869; the Bombay Municipality subscribed Rs. 10,000 to the primary schools in 1866, and only withdrew the sum in the following year on discovering that the civic revenues could not legally be so applied; the series of Gujarathi and Marathi text-books were revised and stereotyped; and in 1868 two new first-grade anglo-vernacular schools were opened in Phanaswadi and Chandanwadi. The Government second-grade schools had meanwhile increased to 8, and the vernacular schools to 25 (15 Marathi and 10 Gujarathi); while in 1868-69 encouragement was extended to higher education by the establishment of 9 government scholarships of £200 per annum, tenable in England for three years by students seeking a university degree or admission to the Indian Civil Service. Two of these scholarships were allotted to Bombay. But the period was chiefly remarkable for the introduction of the grants-in-aid code or system of payment by results, which arose out of the recommendations of a conference of managers of private schools, convened by Sir Alexander Grant in 1864. Although a few exceptional grants had been made before that date to certain charitable institutions, the history of aided education in Bombay must be rightly held to commence with the introduction of this code in 1865,

¹ Local Committees were formed at this time to promote the opening of new schools in various parts of the island. (General Administration Report, 1865-66.)

designed, as it was, for the benefit of any private primary or secondary school, which was controlled by a board of management and was not maintained solely for private profit. Under its provisions the maximum grants per head under the several standards varied from one rupee to Rs. 4 in vernacular schools, from Rs. 6 to Rs. 30 in anglo-vernacular schools, and from Rs. 10 to Rs. 150 in European and Eurasian schools, together with special grants for pupils who passed the Matriculation, F. A., and B. A. examinations. A capitation grant of Rs. 2 in anglo-vernacular and of 8 annas in vernacular schools was also allowed on the annual average attendance of pupils, while grants were also awarded for good needlework to the pupils of European and Eurasian girls' schools. On the introduction of the code in 1865, 4 European and Eurasian schools, 3 anglo-vernacular high schools, and 7 vernacular schools were registered in Bombay for grants-in-aid, aggregating a little more than Rs. 12,000; while, besides these, 10 schools received fixed grants and 6 received no aid, but were open to inspection by officers of the Educational Department. The grant-in-aid code rules and standards, as drawn up by Sir Alexander Grant, remained in force until April, 1870, when further help towards the salaries of assistant teachers and the construction of school buildings was accorded, and the standards were so remodelled as to ensure that the instruction given in a primary, middle, or high school should form a complete course in itself. Thus the private institutions in Bombay received state aid in three different ways. The majority were awarded pecuniary grants in payment of examination results and for the average attendance of pupils; a few charitable institutions received fixed grants paid annually so long as they were reported efficient by the Educational Department; while others again received special sums for the construction of buildings, boarding houses and gynnasia and for the purchase of books and apparatus.

During this period European and Eurasian education benefited by the foundation of the Diocesan Board of Education in 1866-67 and of the Bombay Scottish Educational Society in 1866. The former opened the

Bishop's school at Byculla, St. Peter's school at Mazagon, and St. John's school at Colaba, while the latter set to work to provide a good education for the children of European parents born in India. Government also fostered the education of European and Eurasian children by accordinig special monetary grants to such as passed the higher standards and were willing to study in the University, thus encouraging a class, which had hitherto held aloof from liberal education, to compete with Hindu and Parsi youths in the study of the arts, medicine and civil engineering. Female education likewise received a stimulus by an annual assignment of Rs. 10,000 made by the Government of India in 1868, and by the visit of Miss Carpenter to India and the consequent establishment of female training schools at Ahmedabad, Poona and Bombay. The Bombay school, which was endowed with twelve scholarships, ranging in value from Rs. 15 to 25, existed until 1872, when irregular attendance obliged the authorities to close it; and at the present day the only legacy of Miss Carpenter's philanthropic mission are the Mary Carpenter scholarships for girls, which are annually awarded by the National Indian Association of London to pupils of the recognized girls' schools in Bombay. More successful than the Bombay normal school was a Gujarathi girls' school, opened in the Fort in 1859 by the Trustees of the Gokuldas Tejpal Charities, to which all Gujarathi-speaking Hindu girls are admitted free of charge. The school, which opened with 60 pupils, now contains more than 200. Mr. Peile himself was responsible for the amelioration of Muhammadan education, by obtaining for the Muhammadan schools in Bombay a fair share in the Government grant-in-aid, and by offering special opportunities to Muhammadans to attend the vernacular training-colleges.

Three other features of the educational administration of this period deserve special mention. The first was the institution in 1871 of the Public Service Certificate examination. Up to 1866 a mixed committee, comprising members of the Revenue, Judicial and Educational Departments, had presided over an annual or biennial

examination for admission to the lower grades of the public service ; and this system yielded place in that year to the issue of first class and second class certificates by the Educational Department at the time of the annual examination in each school. A fee of one rupee for a first class certificate and of eight annas for a second class certificate was levied from candidates, it being laid down by Government at the same time that none except holders of such certificates and matriculated students of the University would be eligible for Government employ. Finally in 1871 these arrangements were revoked in favour of an examination held annually at the headquarters of each collectorate and in Bombay, and the fees for first-class and second-class certificates were raised respectively to Rs. 3 and one rupee. The second chief feature of the period was the re-organization in 1868 of the supply of trained school-masters, whose numbers had not increased proportionately with the increase in the number of schools. By means of a system of apprenticeship as pupil-teachers for two years, followed by a year in a training-college and two years of systematic training elsewhere, coupled with the grant of proficiency allowances and pensions, Mr. Peile managed to effect a marked improvement in the personnel of the teaching-staff in primary schools. The third salient event of his administration was the recognition accorded to public libraries, which from 1868-69 were presented with copies of each book purchased from the fund for the encouragement of literature. In Bombay 17 libraries were registered and thus indirectly linked with the Educational Department, among them being the Mulla Firoz library, the Bombay Native General library, the Jamsetji Nasarwanji Petit institute, the Dhanjibhoy Framji reading-room and library, the Jamsetji Nasarwanji Petit Girgaum library, the Muljibhai Jivraj Khoja reading-room and the Bhuleshwar library.

The history of education from 1872, when Mr. K. M. Chatfield became Director of Public Instruction, to 1882 when the Education Commission was appointed, is concerned chiefly with the extension of primary education and the improvement of higher and collegiate tuition.

1872-82.

The former object occupied the chief attention of the Bombay Government, who decided that any large increase in secondary and higher schools should result rather from State-aided private enterprise than from the direct action of their own educational agency. The Bombay primary schools, which up to 1871 had subsisted solely on the Government grant and the general fee fund of the Central Division, were benefited in that year by a grant of Rs. 10,000 by the Bench of Justices, which was subsequently (1878) augmented to Rs. 15,000 by the Bombay Municipality. This amount had been increased on various occasions since that date, but had never quite sufficed to bring the primary schools into line with the other institutions of the city.

Nevertheless, the policy of Government bore fruit in due season; for the Census Officer of 1881 was able to point out that since the Census of 1872 very considerable progress had been made in the education of the population. The percentage of the male population under instruction had risen from 5·0 to 7·6, and of the female population from 1·8 to 2·8; while the proportion of educated males and females had risen, respectively, from 17·5 to 24·9 and from 4·0 to 6·3. This result was mostly due to the opening of new schools. For example, the Antonio deSouza school, which is still held in the Gloria church at Mazagon, the St. Xavier's branch school at Girgaum, the Antonio da Silva school at Dadar, and St. Joseph's Portuguese school at Umarkhadi, had been added to the list of so-called English-teaching schools, in which the proportion of pupils of European descent does not suffice to constitute them European schools; ¹ while in 1872, the list of private vernacular institutions was enlarged by the opening of the Mugbhat school. A decided impetus was vouchsafed to female education by the opening in 1873 of the first Government Gujarathi girls' school at Charni road, which was followed by the opening of the first Marathi girls' school at Kamathipura in 1876. Parsi girls benefited by the foundation of the Merwanji Sethna

¹ Other schools of this kind, now (1909) existing, are the St. Peter's high school for boys at Mazagon, founded in 1883; the St. Isabel's school at Matharpakhadi; and the Barretto boys' school at Cavel.

school in 1871, and Beni-Israel girls by the opening of a female normal school and a Marathi school in Umarkhadi in 1874; the Methodist Episcopal mission founded a similar school in Grant road in 1873-74; the Zenana Bible and Medical mission opened a high school for girls at Girgaum in 1874; while the Frere-Fletcher school in the Fort, so named after Sir Bartle Frere and the Reverend W. K. Fletcher, was opened by Sir Richard Temple in 1878.¹ Other notable features of this period were the opening of the first railway school in 1878 by the Bombay, Baroda and Central India Railway company, and the institution of night-schools. Among the latter, two commenced work in 1873-74 without any aid from Government, while between 1878 and 1886 the Theistic Association started no less than six night-schools, the first being opened at Cheulwadi near Thakurdwar in the former year. The number of mixed schools for children of both sexes was increased by the establishment of an Israelite school in 1875, financed by the Bene-Israel Benevolent Society, and of the American Mission high school, which commenced work in 1877. The Sir J. J. School of Art which up to 1873-74 was managed by a committee as an aided institution was in that year re-organized and placed under the control of the Educational Department. Lastly the period was remarkable for the foundation and recognition in 1875 of the Anjuman-i-Islam, which has since played a prominent part in the education of the Muhammadan population of the city. A fresh stimulus was given to physical education by the foundation in 1874 by public contribution of the Jamsetji Nasarwanji Petit gymnasium at Khetwadi.

In the year 1882 an Education Commission was appointed by Government to enquire into the working of the existing system of public instruction and into the further extension of that system on a popular basis. They recommended *inter alia* that the system of payment by results should not be applied to colleges, which should obtain aid

1882-97.

¹ The school was established in 1860, and was known as the Fort Christian school. The name was changed to Frere-Fletcher school in 1878 with the consent of Government, who contributed to the cost of the building and granted the site.

on other considerations ; that secondary schools should be established by the State on the grant-in aid system ; that primary education should have an exclusive claim on municipal and local funds ; that, as many private schools were inefficient, the grant by results should be raised for both boys' and girls' schools ; and that the maximum rate of Government aid, which they fixed at one-half the entire expenditure of an institution, should be allotted only to primary schools, girls' schools and normal schools. As a result of the commission's labours, the grant-in-aid code was amended and republished in 1886-87, among the additions made being rules requiring all candidates for admission to a Government or aided school to furnish leaving certificates from their last school ; the examinations for public service certificates were modified in 1888 ; and in the same year certain recommendations of the commission regarding middle and high school scholarships were adopted, four middle schools and two high school scholarships being allotted to Bombay city. The subject of training college certificates was also discussed, and as a result an additional or first year's certificate was created in 1887, which enabled men, who fared badly in the first year's test, to serve at once as lower assistant school-masters.¹ But the most noteworthy result of the commission's labours was the foundation of the Joint Schools Committee for the purpose of primary education in Bombay city, which, in accordance with the City of Bombay Municipal Act of 1888, was composed of eight members, four being appointed by Government and four by the Municipal Corporation.² Bye-laws defining the committee's duties and powers were framed and sanctioned by Government, and on the 1st January, 1890, all primary schools in Bombay together with appliances, as well as

¹ This first year's certificate was abolished in 1895. The maximum and minimum salaries of teachers holding first, second and third years' certificates were fixed, respectively, at Rs. 20, Rs. 40, Rs. 60, and Rs. 9, Rs. 11, and Rs. 15.

² The first Joint Schools Committee was composed of Mr. Grattan Geary, the Honorable Mr. N. N. Wadia, Rao Bahadur G. N. Nadkarni, Rao Saheb V. S. Desai, appointed by Government, and Dr. Blaney, the Honorable Mr. Telang, the Honourable Mr. Abdulla M. Dharamsi and Mr. K. N. Kabraji, appointed by the Corporation.

the balance of the Presidency Education fund, composed of school-fees, Government grants and Municipal contributions, were handed over by Government to the Corporation. Among the Government schools transferred to them were eleven girls' schools and six second-grade anglo-vernacular schools, to which they added in 1893-94 an Anglo-Gujarathi school at Nall Bazaar. In return for performing the work of inspection of primary schools, the Committee received from Government the annual sum whichh Government had budgetted for this purpose, before the transfer took place, and were further allowed to utilize the services of the two Government officials who had hitherto acted as Deputy Inspectors of the Marathi and Gujarathi schools.

This period witnessed the foundation by Bishop Meurin in 1886 of a school for the deaf and dumb at Grant road, and also the amalgamation of the four Government anglo-vernacular schools, the Fort Branch, the Jagannath Shankarsett, Chandanwadi and Phanaswadi schools, into the Elphinstone middle school, which is located in the old buildings of the former Elphinstone Institution next door to the Small Causes Court. The latter event arose out of the desire of Government in nowise to restrict the progress of grant-in-aid and private schools. The public also commenced during these years to evince a desire for speial and scientific research by the foundation of the Bombay Natural History Society in 1883, of the Anthropological Society in 1886, and of the Bombay Art Society in 1888; while Government opened fresh careers for the youth of Bombay by the foundation of the Veterinary College at Parel in 1886 and of the Victoria Jubilee Technical Institute in 1887.

The most remarkable features since 1897 were the amendment of the constitution of the Indian Universities and the declaration of the educational policy of the Indian Government in 1903-04. The further extenion and development of the principles laid down in the Despatch of 1854 and affirmed by the Commission of 1882 have been sought and ensured by a variety of means calculated to infuse primary and secondary edueation with new vitality. Thus in 1899 an annual examination for teachers in secondary

1897-1909.

schools was instituted ; the grant-in-aid code was again revised in 1903-04 and the system of payment by results finally abolished ; considerably increased grants have been made to primary and secondary education ; the work of the vernacular text books revision committee has been completed, and some of the revised works are already in use in primary schools ; the method of assessing grants to secondary schools has been revised ; while the formal recognition of unaided schools has enabled the Educational Department to apply a moderate system of control to those institutions. In Bombay city we may remark the appointment in 1903 of an Inspectress of girls' schools, who also supervises the girls' schools of the Northern Division of the Presidency, and the appointment by the Joint Schools Committee in 1904 of a Superintendent of municipal schools with two assistants.¹ A Teachers' association was formed in 1898 with the object of improving the status and qualifications of school-masters and of discussing the educational questions of the day :² a training college for secondary school-teachers was opened in 1906 and accommodated for the time being in the Elphinstone high school : and under the auspices of the Joint Schools Committee, drill, physical education and gymnastics are becoming a regular branch of the curriculum in all classes of schools. Since April 1st, 1908, the cost of primary education has been wholly defrayed by the Bombay Municipality. The Joint Schools Committee has ceased to exist and the schools are now administered by the Municipality.

The most noteworthy girls' school, founded by private enterprize during this period, were Bai Ratanbai Panday's school opened in 1895 and Miss Bennett's anglo-vernacular school at Khetwadi : but that the general progress of the age is gradually overcoming the inherited prejudice against female education is sufficiently proved by the rise in the number of municipal girls' schools from 11 to 23 and of aided girls' schools from 25 to 33 in 1909.

¹ The control of the three Deputy Educational Inspectors serving under the Joint Schools Committee was transferred to the Educational Department in 1904.

² The total number of teachers in the Bombay Municipal Schools is (1909) 386.

The Muhammadans also have imbibed something of the spirit of the times. Two new Urdu schools were opened in 1895 at Colaba and Madanpura, a Deputy Educational Inspector for Urdu schools was appointed the following year, and by 1909 the total number of Urdu schools had increased to 28 (25 for boys and 3 for girls), including 3 night-schools but excluding aided primary Urdu schools. The Joint Schools Committee also turned their attention to the education of the depressed classes, not only by aiding mission schools which receive such children, but by founding four special Marathi schools for their benefit,—a policy which resulted in 857 children from the poorest and most debased communities being under instruction in 1909. Among special educational institutions recently founded are the American Mission school for the blind opened in 1900 and the Victoria Memorial school for the blind—a primary school with industrial classes—opened in 1902;¹ the American Mission laundry school opened in 1903, the Techno-Chemical Laboratory founded by Professor Gujjar in 1900 for the provision of higher instruction in chemistry and technology;² and lastly several institutions for commercial education. The principal seat of commercial education is the Byramji Jijibhoy college of commerce³, the Principal of which also conducts a commercial night-school, founded in 1900; and the rest comprise Mr. S. R. Davar's commercial educational institution, which works on the bureau system obtaining at Antwerp, Paris, Berlin and Liverpool and prepares pupils for the chief commercial and accountancy examinations in England, and Mr. N. R. Mistri's accountancy institution in the Fort, which imparts a knowledge of book-keeping, mercantile law, banking and currency, short-hand, type-writing and mensuration to youths studying at local colleges or holding clerical appointments in mercantile firms. Several short-hand, type-writing, and book-keeping classes in the Fort, Kalbadevi and Girgaum

¹ These and a Deaf and Dumb institute opened in 1886 are classed as Primary aided schools.

² This is now classed as an Arts College.

³ In 1906 a series of lectures were arranged and Professor Lees Smith was invited by Government of Bombay to deliver lectures and instruct the public in Indian economics. The lectures were delivered in the Byramji Cawasji Institute.

prepare students for the London Chamber of Commerce examination, which is annually held in Bombay, while stenotypy or machine short-hand and script phonography have also been introduced into the curriculum of a few schools. The increasing desire for a commercial education is shown by the large number of youths who appeared for the London Chamber of Commerce examination in 1906, and has led Government to include commerce in the list of optional subjects for the School Final Examination.

Among the secondary schools opened since 1897 are the Aryan Education Society's high school and middle school at Girgaum, the Esplanade high and middle schools opened in 1898, a school founded in Mandvi by H. H. the Aga Khan for children of the Imaimi Ismaili Khoja community, the Lady Northcote Hindu orphanage in 1903, the Goan Union school opened in old Dabul Church in 1904, and a Jain high school founded by Babu Pannalal Punamchand in 1906. The municipal grant to primary education rose from Rs. 80,000 in 1898-99 to 2 lakhs in 1904; and, together with the income from fees and the Government contribution of nearly Rs. 73,000, enabled the Joint Schools Committee to increase the number of municipal schools to 98 and of aided schools to 111, to strengthen the teaching-staff and raise their salaries,¹ and to provide suitable furniture and apparatus to the municipal schools. The Committee also revised the curriculum for primary schools in 1900, whereby the course ceases at the fourth standard in which the rudiments of English are taught, uniformity of instruction in Marathi, Gujarathi and Urdu schools has been secured, and the pupils' burden of study has been to their advantage much lightened.

The Municipal Corporation has also not forgotten the prime need of proper school-buildings and accommodation. Prior to 1890 all primary schools, excepting two at Ghorupdeo and Varli, were located in hired buildings, and even at the present date (1909) most of the primary schools and a certain number of aided secondary schools occupy inconvenient or insanitary houses. On the other

¹ The minimum pay of untrained teachers in Municipal primary schools is Rs. 12, and the maximum Rs. 15. Trained teachers receive a minimum salary of Rs. 14 and a maximum of Rs. 30, Rs. 50, or Rs. 70 according to the class of their training-certificates.

hand the Bhuleshwar schools were provided with a suitable building about 1890, half the cost of which was contributed by Government. A buildings fund was opened by the Corporation in 1895, two well-constructed and sanitary buildings were erected from the memorial funds raised to Lord Harris, Governor of Bombay (1890-95) and Mr. S. S. Bengali, and in order to meet the need of housing the municipal primary schools, a programme for expenditure of 10 lakhs on the construction of school buildings was undertaken in 1907 by the Corporation at the instance of Government, who decided to provide a moiety of the cost at the rate of one lakh a year for five years from April 1907. There is, therefore every reason for hoping that the primary schools, will in the near future be as well accommodated as the Government and aided colleges and the Government secondary schools.

Besides the Government, municipal and private institutions, conducted on Western lines, Bombay contains several indigenous schools, conducted by natives of India on traditional methods, which fall within the triple classification of religious, semi-religious, and secular schools.¹ Among the religious schools are the Shri Walkeshwar Vedic Pathashala established in 1903 on Malabar

¹ One most important institution is a class for training Sanitary Surveyors under the Executive Health Officer of the Bombay Municipality. This class was first opened in 1901 and was till recently confined to 12 Government students, of whom 8 were Engineering graduates and 4 Medical graduates. Their fees at the rate of Rs. 25 were paid by Government. If a sufficient number of the above were not available diplomates of the Veterinary College and passed students of the Engineering class of the Sind College were admitted into the class. Since the beginning of 1910 the Royal Sanitary Institute of London has agreed to co-operate in the examination of the class and to grant its certificates to the successful students. The class has now been thrown open to private students who have passed the Matriculation or School Final Examination or the entrance examination of any university other than Bombay. In order that the Municipalities may take advantage of these facilities, their servants are exempted from the preliminary qualifications at the discretion of the Executive Health Officer. The Bombay University has recently established a degree of Bachelor of Hygiene one of the conditions, for qualifications to sit as a candidate for the degree being a six months practical course of Public health administration under the supervision of the Health Officers of Bombay, Calcutta or Madras. Similarly a class has been opened by the Bombay Municipality to impart instruction to medical students in vaccination.

Hill, which teaches young Brahmins, the Hindu ritual, the Jijibhoy Dadabhoy Parsi Madressa founded in 1837 for the teaching of the Zoroastrian Scriptures in the original Zend and later Pehlvi versions, and about 131 Muhammadan schools which expound the Koran and teach a little Urdu. The partly religious schools are the Gokuldas Tejpal Sanskrit Pathashala, established about 1886 near the Gowalia Tank, the Valibai Gujarathi and Sanskrit girls' school opened at Kalbadevi about 1891, the Ayurveda Vidyalaya, established at Girgaum in 1895, the Vidy Lakshmi Pathashala opened at Bhuleshwar in 1897, the Sir Jamsetji Jijibhoy's Zarboshti Madressa, founded in 1863 at Chandanwadi, which teaches Parsi graduates and under-graduates the religion, philosophy and history of the Avesta, the Mulla Firoz Madressa founded in 1854 at Dhobi Talao, and about 20 Muhammadan institutions. The most important of the latter are the Madressa Mohamed Ibrahim Makhba, established in Kazi street in 1834, the Madressa Muhammadiya, established by Sir Adamji Peerbhoy in 1883, opposite Charni Road station, the Madressa Muhammadiya of the Jama Masjid, founded in 1873, and the Madressa Hashimiya at the Jackeria Masjid, all of which give free instruction in religion, logic, Arabic, metaphysics, Persian literature, and the theology of Islam. The secular schools, which number (1909) 75, and are institutions peculiar to the Hindu community, are practically primary vernacular schools which have gradually cast aside their time-honoured curricula in favour of the Government departmental standards of instruction, the reason for the change being that almost all the masters now appointed are men, who have received a Government public school education. Most of the Hindu and Parsi schools in the first two classes, and a few Muhammadan schools, have been privately endowed, and in some of the latter, conducted by Maulvis, no fees are charged to the pupils. Usually the fees vary from four annas to Rs. 2, and the master receives his emoluments either in kind or in cash, but more frequently in both forms. He also is accustomed to receive presents on the occasion of a pupil's *patipuja* or slate-ceremony, thread ceremony and marriage, and on the day when a pupil begins to learn writing,

while in some Muhammadan schools he receives one pice and a wheaten cake from each pupil every Thursday.

The following table shows the number of schools and pupils in Bombay City at successive decades since 1820 and in 1909 :—

Year.		High Schools.		Middle Schools.		Primary Schools.		Special Schools.	
		Number.	Attendance.	Number.	Attendance.	Number.	Attendance.	Number.	Attendance.
1820	Boys	...	...	1	216	4	250	...	...
	Girls	...	...	...	...	...	...	...	...
1830	Boys	1*	250	1†	140	2	1,372	...	...
	Girls	...	...	1	100	...	...	...	...
1840	Boys	1	550	1	150	...	...	...	...
	Girls	...	...	1	120	...	...	...	...
1850	Boys	1	916	1	142	7	733	...	...
	Girls	...	...	1	127	...	...	...	...
1860	Boys	2	901	9	1,301	6	608	2	138
	Girls	...	...	2	150	3	485	...	...
1870	Boys	8	2,994	30	3,814	32	1,791	2	155
	Girls	...	...	...	...	9	1,151	1†	10
1880	Boys	14	3,539	23	3,878	43	3,894	2	355
	Girls	...	...	9	1,029	20	2,064	...	...
1890	Boys	26	8,829	26	2,616	108	10,364	5	980
	Girls	11	850	10	672	36	3,931	...	...
1900	Boys	28	7,682	30	1,843	129	9,859	8	912
	Girls	11	1,229	14	143	55	4,936	3	17
1909	Boys	27	11,176	36	2,587	167	17,043	11	1,320
	Girls	12	1,5861	14	1,185	61	7,736	1	28

* This High School is the Elphinstone Institution.

† These Middle Schools are the Education Society Schools. The primary schools of 1820 belonged to the Bombay Education Society, those in 1830 to the Native Education Society, and those in 1850 and 1860 to the Board of Education. No accurate information about missionary and private schools during these years is available. They are therefore omitted.

‡ This was a normal school for female teachers and was afterwards closed.

The University of Bombay was first established and incorporated by an Act of 1857. The general object of the foundation was to ascertain, for the better encouragement of Her Majesty's subjects in Bombay in the pursuit of a regular and liberal course of education, by means of examination, the persons who have acquired proficiency in different branches of learning and to reward them by degrees, marks of honour, etc. The constitution was considerably modified by an Act of 1904.

The Bombay University.

The University consists of the Chancellor, who is the Governor of Bombay for the time being, the Vice-Chancellor, who is appointed for a period of two years by the Governor-in-Council from among the Fellows, and the Fellows. These constitute the Senate.

Fellows are *ex-officio*, nominated and elected. The *ex-officio* Fellows, the number of whom may not exceed ten, are the Chief Justice, the Bishop of Bombay, the two Members of Council, and the Director of Public Instruction. Of the ordinary Fellows, the number of whom may not be less than fifty nor more than a hundred, ten are elected by certain registered graduates, *viz.*, by Doctors or Masters in any Faculty or by others who graduated in any Faculty not less than ten years before the date of registration, ten are elected by the Faculties, and the remainder are nominated by the Chancellor. Fellows are elected or nominated in the first instance for five years, but they may be re-elected or re-appointed. But, if any elected or nominated Fellow has not attended a meeting of the Senate, other than a Convocation or meeting for conferring degrees, during the period of one year, the Chancellor may declare his office to be vacated.

The Senate is divided into the Faculties of Arts including Science, Law, Medicine and Engineering. The last includes Agriculture. Every Fellow is assigned by the Senate, on the recommendation of the Syndicate, to one or more of the Faculties. Each Faculty is presided over by a Dean, who is elected by the members of the Faculty. The chief business of the Faculties is to advise and report upon matters referred to them for opinion by the Syndicate. They can also make recommendations to the Syndicate or propose Bye-laws or Regulations for the consideration of the Syndicate.

The Syndicate is the executive body of the University. It consists of the Vice-Chancellor, as Chairman, the Director of Public Instruction, and thirteen Fellows who are elected for one year by the several Faculties in the following proportion :—

Five by the Faculty of Arts, one of whom is elected separately to represent the Physical and Experimental Sciences.

Three by the Faculty of Law.

Three by the Faculty of Medicine.

Two by the Faculty of Engineering.

Any member of the Senate may make recommendations or propose bye-laws to the Syndicate, and no proposal may be entertained by the Senate that has not, in the first instance, been considered by the Syndicate or submitted for a period of at least three months for consideration by the Syndicate. Very wide powers are in fact exercised by the Syndicate, but it is by law subject in all matters to control by the Senate, and no regulations have any force until they are approved by the Senate, and confirmed by the Governor-in-Council. The Senate must meet once a year, but the Vice-Chancellor, who presides as Chairman if present, may summon a meeting at any time, and must do so on the requisition of any six members.

The entrance to the University is by the Matriculation examination, which is open to candidates from schools recognized by the University, who are over 16 years of age. After Matriculation none can present themselves for any University examination, unless they have gone through a prescribed course of study at a College affiliated to the University and recognized for the purpose of that course of study; affiliation and recognition are accorded by Government, acting on reports and information submitted to them by the Senate. The following are the College and Collegiate Institutions at present recognized in the different Faculties :--

I.—Elphinstone College, Bombay				1860
II.—Deccan College, Poona	...	...	In Arts,	1860
III.—Wilson College, Bombay	...	...		1861
IV.—St. Xavier's College, Bombay				1869
V.—Gujarat College, Ahmedabad.	In Arts for the purposes of the Examinations for the B. A. Degree	...	...	1879
VI.—Rajaram College, Kolhapur—	In Arts for the purposes of the Previous and Intermediate Arts Examinations	...	...	1880
VII.—Baroda College—	In Arts...	...	...	1881
VIII.—Fergusson College, Poona—	In Arts	...		1884

¹ A person may be admitted to a University examination without going through the prescribed course on the recommendation of the Syndicate or by special order of the Senate.

IX.—Samaldas College, Bhavnagar—In Arts for the purposes of the Examinations for the B. A. Degree	1883
X.—Dayaram Jethmal Sind College, Karachi—in Arts	1887
XI.—Bahauddin College, Junagadh—in Arts ...	1901
XII.—Professor Gujjar's Techno-Chemical Labo- ratory, Bombay—in Arts for the purpose of Branch VI (Chemistry) of the M. A. Examina- tion	1907
XIII.—Government Law School, Bombay—in Law ...	1860
XIV.—Grant Medical College, Bombay. In Medicine; and in Arts for the purposes of the B. Sc. Examination	1860
XV.—The Cama and Alibless Hospitals, Bombay— In Medicine for the purpose of Branch II (Midwifery) of the M. D. examination ...	1907
XVI.—Poona Agricultural College. In Engineering; for the purpose of the examinations for the degree of Bachelor of Agriculture ...	1907
XVII.—College of Science, Poona. In Civil Engineer- ing; and in Arts for the purposes of the Examinations for the B. Sc. Degree...	1865.

The length of College attendance required for the various degrees is :—For B.A.—four years ; B. Sc.—four years; LL.B.—two years after graduation in Arts ; Licentiate of Medicine and Surgery (soon to be abolished)—five years ; Bachelor of Medicine and Surgery—six years ; Bachelor of Agriculture—four years ; Bachelor of Engineering—four years.

Any Bachelor of Arts may present himself for the examination for the Degree of M.A. Any Bachelor of Laws may, two years after taking the Degree of LL.B., present himself for the examination for the Degree of Master of Laws. After going through certain prescribed courses of study or practice, varying from five years to one year, a Bachelor of Medicine and Surgery may present himself for the examination for the Doctor's Degree (M. D.). The examination for the Degree of Master of Civil Engineering is open to any Bachelor of Arts or Science who has practised as a Civil Engineer for at least three years after taking the Degree of L. C. E. (now B. E.)

The University may also, under certain conditions, confer honorary degrees. The honorary Degree of LL.D. has been conferred five times.¹

¹ The recipients of this honour were the Marquis of Ripon, Mr. William Wordsworth, Sir Raymond West, Mr. R. G. Ghadar-
kar and Mr. F. G. Selby.

The accounts of the University are examined and audited by a Board of Accounts, which is appointed annually by the Senate and meets ordinarily once a quarter. They are further submitted once every year to the Governor of Bombay in Council for such examination and audit as he may direct.

The endowments of the University, the interest on which is appropriated to certain fellowships, scholarships and prizes amount to thirteen lakhs. The yearly income is derived from interest on accumulation, and examination fees. The last account sheet showed an income of 2·25 lakhs and an expenditure of 1·89 lakhs.

University Results.

Passed in	1861.	1871.	1881.	1891.	1901.	1909.	Total number passed till the end of 1909.
Matriculation ...	39	227	388	916	1,218	1,638	34,331
Bachelor of Arts ...	4	14	36	129	238	331	5,533
Bachelor of Science ...	...	..	2	3	6	14	156
Licentiate of Medicine and Surgery.	4	6	14	22	28	89	1,064
Licentiate of Agriculture ...	...	...	..	...	1	...	52
Bachelor of Agriculture ...	...	...	...	...	...	26	26
Licentiate of Engineering ...	...	2	16	9	35	35	747
Bachelor of Laws ...	...	...	5	35	142	154	1,788
Master of Laws ...	...	...	...	...	...	...	1
Master of Arts ...	...	1	3	6	12	53	484
Doctor of Medicine ...	...	...	...	1	...	2	9
Master of Civil Engineering ...	...	...	...	...	...	...	1

The Elphinstone College originated in a meeting of the citizens of Bombay held on the 28th August, 1828, to

The Elphinstone College.¹

¹ See The Elphinstonian, September, 1906; Bombay Quarterly Review, 1855; Times of India, 10th May, 1862, 20th January, 1894, April 3rd, 1897; April 1906. Mrs. Postans' Western India in 1838, I, 46; Lady Falkland's Chow-chow (1857) I, 49.

decide upon a suitable testimonial to their departing Governor, Mountstuart Elphinstone, whom, in the words of one of those present, all persons regarded "as their common father and friend". A sum of Rs. 50,276 subscribed at the meeting was devoted to the cause of education in accordance with a general resolution "that the most satisfactory and durable plan of carrying their public wishes into effect is by accumulating a fund of money to be vested in Government securities from the interest of which, according to its amount, one or more Professorships (to be held by gentlemen from Great Britain until the happy period arrives when natives shall be fully competent to hold them) be established under the Bombay Native Education Society, for teaching the English language and the arts and sciences of Europe ; and that these Professorships in compliment to the person in reference to whom the meeting has been convened, be denominated the Elphinstone Professorships". The final amount subscribed reached a total of nearly 2·3 lakhs, which subsequently accumulated to Rs. 4·4 lakhs ; and in 1835 the Elphinstone Institution was formally constituted, the first Professors arriving and commencing their labours in February, 1836. In 1855, the first Native Professor, Mr. Dadabhai Naoroji, was appointed ; and in the following year the professorial element, constituting the College, was separated from the Elphinstone Institution, which thenceforth was known as the Elphinstone High School. The Elphinstone College was formally recognized by the Bombay University in 1860. Since 1845 the office of Principal of the College has been held in succession by Dr. Harkness (1845), Sir Alexander Grant (1862), Professor Chatfield (1866), Dr. Wordsworth (1874), Professor Oxenham (1890), Professor Hathornthwaite (1894), Professor Macmillan (1900), Professor Sharp (1905) and Professor Covernton (1909).

Several changes of situation has the College undergone since its foundation in 1835. The first Professors in 1836 occupied a room in the Town Hall, the Elphinstone Institution itself being housed in a building described in 1855 as "a disgrace to the present advanced state of education in Bombay", and as being "overcrowded, badly

situated and unventilated".¹ This building stood near the present Small Cause Court on the site of the Elphinstone Middle School; and a few months after the above words were penned the College was removed to more commodious premises, to the west of Babula Tank and opposite to the Grant Medical College and the Jamsetji Jijibhoy Hospital.² Here the College remained until 1861-62, when a move was made to a bungalow, now known as Tanker Villa, on the margin of Gowalia Tank; and thence the institution again migrated in 1871 to a new building on the Parel road, now occupied by the Victoria Jubilee Technical Institute. In 1888 the College experienced its final transfer to the Fort, where it occupies half of a building originally intended for the Government Central Press, the adjoining plot of vacant land being used as a playing-field by the students of the College. Government have however recently decided to utilize this plot for a new college of science³ and has offered in its place the use of a plot on the Oval facing the Secretariat. The present college buildings have been found small and inconvenient and the question of another transfer has sometime been under discussion.

The property and endowments of the College are vested in four trustees, the annual income amounting to about Rs. 96,000, of which Rs. 16,000 represent the income of endowments proper. Nearly Rs. 40,000 are received as fees, and the balance represents a grant from Government. Besides the original endowment for Elphinstone Professorships, there are three scholarship funds, two in memory of Sir Raymond West, formerly Chief Justice of Bombay, and the Earl of Clare, and the third established by H. H. the Gaekwar of Baroda, and nine prize funds for excellence in Natural Science, Sanskrit, English, Mathe-

¹ *Bombay Quarterly Review*, 1855, p. 123.

² This house was razed to the ground in 1904. A new chawl has been erected on the site.

³ The proposal to open a central Science Institutue or College of Science is still (1910) under consideration. Munisicient offers have been received from Sir Jacob Sassoon (Rs. 10,00,000), Sir Currimbhoy Ebrahim (Rs. 4,50,000) and Mr. Chunilal Madhavlal of Ahmedabad (Rs. 4,00,000).

matics or History. Forty-five scholarships, varying in value from Rs. 9 to Rs. 20 per month, are annually awarded, while Government maintain six Dakshina Fellowships of Rs. 50 per month apiece, for the encouragement of graduates preparing for higher degrees. The latter assist the ordinary staff in the supervision and tuition of the students. The College tuition-fee is Rs. 60 per half-year.

The subjoined table shows the number of students, amount of fees and total expenditure of the College at different periods :—

Year.		Number of Students.	Amount of Fees.	Total Expenditure.
			Rs.	Rs.
1870-71	...	133	9,243	73,538
1880-81	...	175	16,757	80,285
1890-91	...	253	22,174	94,954
1900-01	...	300	34,476	71,291
1908-09	...	365	40,394	93,218

The courses taught are those for the degrees of B.A. and M.A. and also (when necessary) of B. Sc., lectures being given in English, Sanskrit, Persian, French, Logic and Moral Philosophy, English and Indian History, Political Economy, Mathematics, Physics, Botany, Zoology and Chemistry. Between 1862 and 1909 the number who obtained the B.A. degree was 1,130 and the M.A. degree, 122. The tutorial staff comprises five European professors, who are members of the Indian Educational Service, six Native professors, a Shastri for Sanskrit, an assistant teacher of Persian, and a Librarian who also acts as Superintendent of the College hostel. The hostel, to which a new wing has recently been added in memory of the late Mr. Justice Telang, is situated about a quarter of a mile from the main building and accommodates about one-third of the total number of students now on the rolls. The residents in the hostel pay a half-yearly fee of Rs. 23 for rent, lights, service, etc., in addition to the tuition-fee. Other noteworthy adjuncts of the College are the library, containing about 10,000 volumes, to the upkeep of which Government contributes Rs. 1,500 a year.

and the physical, chemical and biological laboratories, of which the first-named is now fully equipped for the use of students preparing for the B. A. degree. Membership of the College Gymkhana Club affords the students ample means of recreation, for the College cricket team has won the Northcote Challenge Shield four times, and the hockey team is regularly entered for the annual Aga Khan Hockey Tournament.

The Wilson College owes its origin to an English school opened in 1832 in Military Square in the Fort by the late Dr. John Wilson, who collected a public subscription for this purpose, and conducted the school jointly with the Reverend Robert Nesbit. In 1835 the Church of Scotland officially recognised the school, which thenceforth was styled the General Assembly's Institution; the standard of instruction was gradually raised, and under the auspices of a staff, which included the founder, Mr. Nesbit and Dr. Murray Mitchell, the school attained in those pre-university days to the status of a college, carrying its pupils far beyond the high school stage of English education. A commodious building was then erected by public subscription near Raniwadi, Kalbadevi road; but in 1843, when the building was just completed, the Disruption took place, which divided the Church of Scotland into the Free and Established Churches, and to the latter Church the building passed under its old name.¹ Here the Established Church conducted a high school for many years, until the trustees of the Gokuldas Tejpal charities purchased the building and devoted it to the high school which they still maintain.

Meanwhile the Free Church, to which Dr. Wilson and his colleagues adhered, had to find a new home for their educational work. A building was erected in Khetwadi near Ambroli House, in which Dr. Wilson spent the greater portion of his life; and this building, which was long known as the Free General Assembly's Institution, accommodated both a school and a higher section, which was recognized by the University as an affiliated College in 1861. By 1880 the largely-increased number of pupils

The Wilson
College.

¹ The school was familiarly known to Bombay residents as "the school of the four pillars," in allusion to four massive pillars which formed a conspicuous feature of the building.

led the authorities to decide upon separating the school from the college and upon housing the latter in a new building. In 1882 Dr. Mackichan undertook the task of raising the requisite funds in Scotland, and collected about £6,000, to which several Native Chiefs of Western India added donations in memory of Dr. Wilson. The Government of Bombay at the same time granted Rs. 87,000 towards the cost of the building and also the site at Chaupati on which the Wilson College now stands. The foundation-stone was laid by Sir James Fergusson on the 10th March, 1885, and the building, designed by Mr. John Adams, was formally opened by Lord Reay on the 14th March, 1889. The original plan included a block of students' quarters, to which additions were afterwards made, thus raising the total cost to more than 2 lakhs : and fresh extensions, costing Rs. 50,000, have recently been made. A large piece of ground on Kennedy Sea Face has been assigned to the College for Gymkhana purposes. The old building in Khetwadi, which was handed over to the high school, has been enlarged by the addition of a third storey, and is now known as the Wilson High School.

The number of pupils in the College rose from 18 in 1870-71 to 64 in 1880-81, 223 in 1890-91. In the next five years the numbers rose rapidly to over 500 ; but the outbreak of plague at the end of 1896 drove many students away from Bombay Colleges. Subsequent figures are 376 in 1900-01, 425 in 1905-06, and to 518 in 1909. The staff consists of the Principal and 14 professors who teach the courses for B. A., B. Sc., and M. A. degrees, as laid down by the Bombay University. Of these nine are Europeans. Laboratories for practical work are attached to the College, which has prepared 929 graduates since its affiliation. The roll of the College also includes 31 lady-students, of whom 19 are Parsis, 8 Hindus, 3 Christians and one is a Muhammadan. The College is supported partly by fees and partly by a Government grant and contributions by the Free Church of Scotland.

St. Xavier's College was founded in 1868 with the object of educating the Roman Catholic youths of the Bombay Presidency, and was affiliated to the Bombay University in

the year following.¹ Though primarily intended for the benefit of followers of the Roman Catholic faith, the College from the outset admitted students of other denominations, and consisted of two distinct portions, the High School and the College proper, which were both accommodated in a building in Cavel until 1873. In that year the large building, situated on the Carnac road, near the Framji Cowasji Institute, was completed at a cost of 2·6 lakhs, the amount being met by public subscription and by a grant of Rs. 61,308 from the Bombay Government; and here both the School and College were located for nearly a generation. The building is composed of two wings, divided by a quadrangle, but linked by a central block surmounted by a tower, 120 feet in height.

By 1885 the need of further accommodation made itself felt, and, as a temporary measure, the College boarding establishment was transferred to St. Mary's Institution at Mazagon. A small block had been added to the east wing in 1883 to serve as chemical laboratory: but the difficulties arising from pressure of space were not definitely obviated till 1890, when the existing College building on Cruickshank road between the Elphinstone High school and the Cama Hospital was completed at a cost of more than 1½ lakhs. From 1891 to 1900, the lower division of the High school was accommodated in the new building but since the latter date the whole school has been in occupation of its old quarters, and the new building has been exclusively reserved for the College. While lacking the large hall, which is so marked a feature of the older building, the College premises contain several lecture-rooms, physical, chemical and biological laboratories, as also library and residential quarters for the professors, who are nearly all Jesuit Fathers.

The number of students at decennial periods since the foundation of the College has been as follows:—in 1870,

¹ The funds for its foundation were obtained by public subscription, one of the chief promoters of the movement being Dr. Leo Meurin, Roman Catholic Archbishop of Bombay, from 1867 to 1886. The first Principal of the College was the Rev. Father J. A. Willy.

13; 1880, 42; 1890, 202; and 1900, 181. In March 1909, the number amounted to 372, the increase being most marked in the case of students for the M.A. degree. From 1873, when the first student from the College passed the M.A. examination, down to 1900, the College could boast of only 22 Masters of Arts, while, during years 1900 to 1909, 57 students have taken this degree, and the Chancellor's Medal—one of the most coveted honours in the University—has been awarded five times to students of St. Xavier's. Up to 1903 the College possessed only 4 endowed scholarships, but by the help of some of the friends and old students of the College that number has been raised to 16 and since 1891 three fellowships from the Dakshina Fund have been placed at the disposal of graduates of the College. An annual grant-in-aid of about Rs. 10,000 is received from Government. The professorial staff consists of the members of the Society of Jesus and four Indian professors.

The new college hostel was opened in June 1909; it stands on a plot of 5,000 square yards adjoining the College grounds granted to them by Government for this purpose. The College and High school are independent of one another. St. Xavier's High school contains about 1,400 boys, who are educated up to the Matriculation standard, and some of whom after passing the Matriculation examination continue their studies in the College. The High school, like the College, receives an annual grant from Government of Rs. 10,000. The income from fees amounts in the case of the College to about Rs. 30,000 and in the case of the High school to about Rs. 45,000, which together with the Government grants is spent upon maintenance.

The Grant
Medical
College.

The Grant Medical College,¹ situated at the junction of Parel and Babula Tank roads was founded in 1845 in memory of Sir Robert Grant, Governor of Bombay

¹ The Foundation-stone of the College was laid by the Bishop of Calcutta on March 30th, 1843. Beneath the stone was laid a silver plate bearing the following inscription :—"In the reign of Her Most Gracious Majesty Queen Victoria and under the Government of the Honourable Sir George Arthur, Bart., K.C.H., Governor of Bombay, the foundation-stone of the Grant Medical College to be erected on this spot at the joint expense of the Honourable East India Company and of true friends of the late Right Honourable Sir Robert Grant, G.C.H., in memory of eminent Christian virtues, and the just and enlightened administra-

(1835-38), with the object of "imparting, through a scientific system, the benefit of medical instruction to the natives of Western India". A moiety of the cost of the building was defrayed by Sir Robert Grant's friends, the remainder by Government. With the exception of certain endowments for the encouragement of deserving students, the College is entirely supported by Government, and is under the immediate control of a Principal, subordinate to the Director of Public Instruction. Lectures are delivered in English on every branch of medical science by European and native Professors, the former usually being members of the Indian Medical Service, assisted by Lecturers and Tutors and Fellows of the College, who are generally Licentiates of Medicine and Surgery of the Bombay University, and by Honorary Medical Officers. The present teaching staff consists of nine European and two native Professors, one European and one native lecturer, one Demonstrator (belonging to the cadre of Civil Assistant Surgeons) and 26 tutors and fellows. Besides there are Honorary Medical Officers who give clinical instruction to students at the hospitals of the city. Formerly the College conferred upon its students a diploma or license to practice medicine with the designation of "Graduates of the Grant Medical College"; but in 1860 the College was affiliated to the University as an institution for medical education and therefore ceased to grant such diplomas. Attached to the College is a Laboratory for scientific medical research, the gift of Mr. Framji Dinsa Petit, which was opened in 1891.

The students fall into two classes, namely, those who are graduates and under-graduates of the Bombay University or of any other University recognised by the latter, and who are educated for the medical degrees of M.D., L.M. & S.,

tion of that distinguished person, was laid with solemn prayer to Almighty God by Daniel, Bishop of Calcutta and Metropolitan of India on Thursday, March 30th, 1843, in the presence of the Governor and other chief personages of the Presidency of Bombay, Captain W. B. Goodfellow, Bombay Engineers, Architect. *Times of India*, 22nd April, 1843. A medical school had been started in 1825 by Mr. Elphinstone's Government and placed in charge of Dr. McLennan. This scheme was developed by Sir Robert Grant. Prior to 1845 medical science was confined entirely to the members of the covenanted medical service.

and M. B. B. S.¹ and European and Eurasian students, who are selected by competitive examination at various Indian centres and who are educated at Government expense for the grade of Military Assistant Surgeon. Since the establishment of the College, 51 Graduates with the old collegiate diploma, 974 Licentiates of Medicine and Surgery,² and 7 holders of the M. D. degree have passed through the course. The total number of students during the last four decades and in the year 1908-09 is shown in the following table :—

Year.	Number of Students,				
	Civil			Military.	
1870-71	95	104
1880-81	235	42
1890-91	178	25
1900-01	401	38
1908-09	482	44

The average annual income of the College during the last five years was Rs. 78,470, and the expenditure was nearly 1½ lakhs. The latter includes the emoluments of the Professors, most of whom receive a consolidated salary as Professors of the College and Medical Officers of the attached hospitals. The College is endowed with 30 separate scholarship and prize funds, amounting in the aggregate to Rs. 1,85,000, out of which Rs. 1,11,300 are lodged with Government and the remainder with trustees appointed by Government.

Libraries.

No public libraries existed in Bombay during the 18th century ; but the Company appear to have maintained a library for their own use as early as 1715. The Reverend Richard Cobbe, writing to the Directors, remarked :— “ I have sent your Honours a catalogue of books contained

¹ The course of study for the M. B. B. S. degree lasts for five years, the College fee being Rs. 144 per year, payable in two equal instalments. An additional fee of Rs. 100 had lately been imposed upon 4th and 5th year students for hospital-practice, which is payable in four equal instalments.

² L. M. & S. degree is also conferred for the present but it will be extinct in a few years. New admissions for the L. M. & S. course are stopped.

in the Honourable Company's library with an account of such as were by the Governor and Council thought wanting, requesting the same may be sent over or any other books Your Honours shall think more useful and necessary": In 1804, the Bombay Branch of the Royal Asiatic Society (then the Literary Society) established its library, and between that date and the middle of the century some ten libraries sprang into existence.² Among these were the Mulla Firoz library, established in 1831, to receive a bequest of manuscripts from one Datna Mulla Feroz, which mostly contains books and manuscripts dealing with the Zoroastrian religion and is free to all, and the Native General Library³, which was established in 1845, in a hired house in Dhebi Talao, and was patronized by all sections of inhabitants. Another institution of this period was the Native Book Club, which was accommodated in a room of the General Assembly's Institution. Many fresh institutions of this character were founded during the latter half of the 19th century, among the first and most popular being the J. N. Petit Institute, which originated in a reading-room opened by Parsi students.⁴ The most flourishing Musalman institutions are the M. J. Khoja Library and the library of the Anjuman-i-Islam. A statement giving details of the chief libraries existing in Bombay City will be found as an appendix at the end of this chapter.

¹ The Church of Bombay by Cobbe.

² There is a reference to a circulating library in 1800 in the *Bombay Courier*.

³ The meeting to establish the Library was held in a house near Trinity Chapel, Dhobi Talao; and the first Managing Committee consisted of 7 European and 7 Native gentlemen. The number of members and subscribers was 70. When the Framji Cowasji Hall was opened, it was arranged to incorporate the Native General Library with it. In 1865 the Hall was completed and the library was removed there. At the suggestion of Sir T. Perry, the Students' Literary and Scientific Society had been amalgamated with it in 1852.

⁴ On the first April 1856, a number of Parsi Students of the Elphinstone College collected a small number of books and housed them in a building in Mody street, Fort. The library was opened under the name of the Fort Improvement Library. In 1857 a regular committee was established to manage it, and Government gave it aid. In 1866 the name was changed to the Fort Reading Room and Library. In 1891 Mr. N. M. Petit offered 25,000 in memory of his son Jamsetji, who was for many years the Director of the Institution. Its name was accordingly changed again to the Jamsetji Nasarwanji Petit Fort Reading Room and Library.

Journalism. The history of journalism in Bombay commences with the publication of the *Bombay Herald* in 1789 and of the *Bombay Courier* in 1790. The former disappeared after a brief, almost meteoric, existence, while the latter continued to exist, as a separate publication, until 1847. Who its original proprietors were cannot be definitely stated ; but its express object was the support of Government, and it was for many years known as the official organ. The office of the paper was in Forbes street. In 1792 it enjoyed the exclusive patronage of the Bombay Government and continued to publish the orders of Government in full until 1830, when the *Bombay Government Gazette* made its first appearance, under the auspices and editorship of Colonel Jervois of the Bombay Engineers¹. Among the chief contributors and supporters of the *Courier* were Mr. Elphinstone, who ventilated his views on native education in its pages, Colonel Vans Kennedy, Sir Alexander Barnes, Sir Henry Rawlinson, and Mr. Bell, a Member of Council².

In 1791 the *Bombay Gazette* appeared for the first time, and shared journalistic honours with the *Courier* until 1819, when Captain Stocqueller arrived in Bombay. He, after a brief period of military duty, bought a paper called the *Argus*, which had been recently started by one Mr. Beck, and republished it under the name of the *Bombay Chronicle*. The two leading journals were described by him as "composed almost entirely of selections from English papers with an occasional law report, while the Editor seldom found nobler occupation than the record of a ball and supper, or a laudatory notice of an amateur performance".³ The *Bombay Chronicle* died a natural death, when its editor returned to England about 1822 ; but

¹ *Bombay Gazette*, 1st July, 1906; "Reminiscences of a Journalist" by Captain J. H. Stocqueller, published in *Times of India*, 17th July, 1872.

² Mr. Bell was peremptorily ordered by the Court of Directors to sever his connection with the *Courier*, which enjoyed the monopoly of all Government advertisements for Rs. 40,000 annually. Captain J. H. Stocqueller bought his share in the paper for Rs. 26,000.—*Times of India*, 17th July 1872.

³ "Reminiscences of a Journalist" by Captain Stocqueller. *Times of India*, 10th July, 1872.

in 1827 Captain Stocqueller again sought these shores and commenced to issue the *Iris*, which for a time had phenomenal success in connection with the dispute between the two leading sects of Parsis on the subject of the Zoroastrian calendar. Mr. Henry Roper, afterwards Chief Justice, became one of this paper's most valued contributors; and shortly afterwards the proprietors of the *Courier*, who watched the progress of the *Iris* with considerable misgivings, persuaded Captain Stocqueller to amalgamate his journal with theirs and become editor of the *Courier* on a salary of Rs. 1,000 a month. The gallant Captain was extraordinarily energetic and of far less compromising nature than the modern pressman. For several weeks he filled the pages of the *Courier* with violent attacks upon the *Bombay Gazette*, which ended in his fighting a duel with the editor of the latter journal, whom he described subsequently as "a pugnacious retired mariner." He next commenced to find fault with Sir John Malcolm's scheme for reforming the salaries of officials and the batta of the Bombay troops, earning in the latter matter so much gratitude from the officers of the Bombay Army that they aided him to commence the publication of a "Sporting Magazine and Racing Calendar." Finally, with the help of Robert Xavier Murphy, an Irish Catholic and interpreter of the Supreme Court, he succeeded in forming a General Library at Bombay, and that accomplished, retired in 1830 to Calcutta to edit the *Harkaru*.¹

Apparently by this date Bombay journalism had distinctly improved in character and tone; for Fontanier, the French Vice-Consul at Basra, who visited Bombay in 1835, remarked:—"Que l'on prenne une publication de Calcutta, de Madras et surtout de Bombay, un journal par exemple, et l'on est saisi de tristesse. Il est impossible de ne pas remarquer le talent, la science, et surtout les vues d'utilité qui ont présidé à la redaction; alors on les compare involontairement avec le fatras, l'inutile verbiage, le profonde ignorance qui caractérisent les feuilles Européennes."² The chief English papers in 1838 were

¹ Times of India, 17th July, 1872.

² Voyage dans l'Inde. Paris, 1844.

the *Bombay Gazette*, the *Bombay Courier*, and the *Bombay Times*, the last named of which appeared for the first time in 1838; while Native journalism was represented by the *Darpan* (Mirror), a Marathi publication, edited by Bal Shastri, and confined to local and domestic matters; the *Chabuk* (Lash), which followed a more outspoken policy and was printed in Gujarathi; the *Samachar*, also a Gujarathi paper, and the *Jam-e-Jamshed* (cup of life), edited by a Parsi and treating principally of commercial matters.¹ Two years later (1840) journalism received a considerable impetus by the publication of at least six new monthly magazines, among them being the *Dig Darshan* and *Vidya Sagar* in Marathi, the *Bombay Magazine* and the *Bombay Sporting Magazine* in English, while seven native newspapers, owned by Parsis, Hindus and Muhammadans, catered for the taste of the native public.² In 1844 appeared the *Bombay Witness*, a religious weekly, which never paid expenses, and was given up in December 1846; in 1845 the *Bombay Mail* was instituted as a monthly summary of Bombay affairs for the English public at home; an *Indian Sporting Review*, published at the *Bombay Gazette* office and characterized as full of "elegance, wit, spirit and sprightliness", ousted the *Sporting Magazine* in the same year; while in 1846 a new daily paper was issued under the title of the *Bombay Telegraph and Eastern Intelligence*.³ The *Courier* was merged in the *Bombay Telegraph*, which became the *Telegraph and Courier*.

Meanwhile Indian journalism had not stood still; for by the middle of the nineteenth century Bombay possessed six Gujarathi newspapers, notably the *Samachar*, first issued in 1822, the *Jam-e-Jamshed*, which started in 1831, the *Dnyan Prasarak*, a magazine started in 1847, and the *Rast Gostar*, which was first published as a fortnightly in 1851. The neighbourhood of the old Bread Market in the Fort might have been described as the Fleet street of Bombay in those days, so far as native

¹ Mrs. Postans' *Western India* in 1838, Vol. I, 69.

² *Bombay Times*, 16th May 1840, and 12th June 1844.

³ *Bombay Times*, 6th July 1844; 26th February and 30th April 1845; 27th June 1846.

publications were concerned; for here could be seen the offices not only of the three papers above mentioned, but also of the *Parsi Reformer*, the *Darpan*, the *Durbin* (Telescope), and the *Bagh-e-Nashiyat* (Garden of Wisdom), edited by Mr. Naoroji Kabraji.¹ The general spread of education was also noticeable in the demand for the publications of local scientific societies. The Transactions of the Bombay Literary Society, which were printed during the first quarter of the century, had to be discontinued on the score of expense; but a longer life was vouchsafed to the Transactions of the Bombay Branch of the Royal Asiatic Society, of the Agri-Horticultural Society, of the Medical and Physical Society and of the Geographical Society.

The movement for the publication of new European journals steadily progressed. A weekly paper, the *Spectator*, appeared early in 1847, the *Bombay Times* joined the ranks of daily papers in 1850, a *Bombay Quarterly Magazine* was issued from the Byculla Press in the same year, and these were followed by the *Bombay Guardian*, an evening paper, in 1851, the *Bombay Herald*, a bi-weekly, in 1855, and the *Bombay Standard* started by Dr. Buist in 1858.² Most of these disappeared or were absorbed in other papers as the years went by, as was also the case with more than one vernacular paper, issued between 1840 and 1870. Those which preserved the even tenour of their way were the *Bombay Gazette*, which had altered its title to the *Gentleman's Gazette* about 1842, and the *Bombay Times*, which absorbed the *Standard* (1859) and the *Telegraph and Courier* (1861) and became the *Times of India* in 1861, and among Native Journals, the *Indu Prakash*, an Anglo-Marathi journal dating from 1862, and the weekly *Gujarathi* which first appeared in 1879. These were followed a

¹ Mr. K. N. Kabraji's Reminiscence published in *Times of India*, 1901. The *Darpan* was the first Marathi daily. It appeared in August, 1849.

² *Bombay Times*, 6th January 1847; 18th September, 1850; 12th March, 1851; 16th December, 1854.

³ In 1849 Mr. Jagannath Shankarsett sued the proprietors of the *Gentleman's Gazette* for libel, in that they published the story of an attempt to cheat a Marwadi by a fat Hindu, and the frustration of the plot by a wise Parsi. The plaintiff was nonsuited.

little later by the *Kavera-Hind*, published first in 1882, and in 1888 by the *Hind-Purani*. Vernacular journalism in general received no little impetus from the famous Mahimna Lalab Case of 1892, which arose out of the startling but wholly justifiable charge laid against the high-priests of the Vallabhacharya sect by the late Mr. Karsandas Mulji in the columns of the *Sigir Prakash*, which was amalgamated subsequently with the *Pust-Gitanjali*. The public conscience was unquestionably stirred to its depths by the disclosures made during the hearing of the case; and the vernacular press of that date must be held to have merited in great degree the eulogy which Sir Joseph Arnold in his judgment passed upon the individual defendant :—"At a risk and at a cost" he remarked "which we cannot adequately measure, these men have waged determined battle against a foul and powerful delusion. They have dared to look eastward and westward boldly in the face, and proclaim before the world of their votaries that their evil is not good, that their lie is not the truth. In thus doing they have done bravely and well. It may be allowable to express a hope that what they have done will not have been in vain, that the seed they have sown will bear its fruit, that their courage and consistency will be rewarded by a steady increase in the number of those, whom their words and their example have quickened into thought and animated to resistance, whose homes they have helped to cleanse from loathsome lewdness, and whose souls they have set free from a debasing bondage." Among other local papers which upheld the policy of Mr. Karsandas Mulji at this juncture were the *Bombay Saturday Review*, the *Bamdad*, the *Apekhyar*, the *Shivshir Bahadur*, the *Dost-e-Hind*, the *Dayanodaya* and the *Klept Dosta*.

Since 1880 the number of journals, both English and vernacular, has steadily increased, and the native press has made great strides in printing during the last fifteen years. At the present date (1909), there are altogether 131 newspapers and periodicals printed in Bombay, and the number of books annually published by the local presses ranges from 700 to 1,000.

The first printing press appears to have been established in Bombay in 1674, in consequence of the following letter despatched by the Deputy Governor and Council of Bombay to the Court of Directors in 1670 "Bimgee (Bhimji) Parrack (Parakh) makes his humble request to you that you would please to send out an able printer to Bombay, for that he notes a curiosity and earnest inclination to have some of the Brahminy writings in print, and for the said printer's encouragement he is willing to allow him £50 sterling a year for three years and also to be at the charge of tools and instruments necessary for him. And in case that will not be sufficient, he humbly refers it to your prudence to agree with the said printer according as you shall see good, and promises to allow what you shall order. It is not improbable that this curiosity of his may tend to a common good, and by the industry of some searching spirits produce discoveries out of those or other ancient manuscripts of these parts which may be useful or at least grateful to posterity." The Court of Directors thereupon engaged Mr. Henry Hill as "Printer for the Island of Bombay and despatched him from London in one of their ships" with a printing-press, type, and a considerable quantity of paper. On his arrival in 1674, Bhimji was disappointed to find that Hill, albeit an expert printer, was not a founder and was quite unable "to cut the Banian letters;" and he therefore wrote once again to the Court of Directors who replied by sending out a type-founder in 1678.¹

Printing
Presses.

From that date up to 1778 no information is available regarding printing presses in Bombay. But from a calendar "for the year of our Lord, 1780, printed by Rustom Caresajee (Karsedji) in the Bazar," it appears that English printing was performed by a Parsi about the year 1778. The following twenty years witnessed the introduction of journalism and the establishment of regular printing presses, for example the Bombay Gazette press founded by Douglas Nicholson and the Bonibay Courier press, which commenced work about 1790. The difficulties in the path of the press managers of those days were

¹ India Office Records. *Bombay Gazette*, 1st July, 1906.

considerable. For the publication of an almanac the European Manager had a staff of "six Portuguese lads, from the toddy-trees of Mahim, who had been taught to read prayers in Latin. They knew the letters of the English alphabet, but could not read a first English primer. These men were assisted by half-a-dozen Maratha compositors, who could fix type into their sticks *ex tempore*, and who judged of a particular letter by its appearance only."

At the close of the eighteenth century newspapers and presses were subjected to various restrictions, one of them being that no article could be published unless it had been approved by the Chief Secretary to Government. But several of these disabilities were removed during the Governorship of Mountstuart Elphinstone; and by 1835 the presses had become practically free from official interference or supervision, though it was still understood that in accordance with an order of 1826, Government servants were forbidden to act as Editors or Proprietors of any newspaper. In 1854 an Editors' room was opened in the Secretariat. As regards native printing presses the earliest appears to have been the Bombay Samachar press, opened in 1812, which published the first Gujarathi calendar in 1814 and the first edition of the *Bombay Samachar* in 1822.¹ About 1830 Government opened a press for their own official publications, which was taken over by the Byculla Education Society in 1848. This Society held the monopoly of all Government printing for a considerable period. By 1867 Bombay contained about 25 printing presses, the chief of which were the Times of India, Bombay Gazette, and Byculla Education Society's presses, Ganpat Krishnaji's press, the Imperial and Oriental presses, and the Indu Prakash, Jam-e-Jamshed, Akbar-i-Soudagar and Darpan presses. By 1878 the number of presses had increased to 53, including the Government Central Press and 48 presses under native proprietorship. Of the latter 29

¹ Times of India, May 1st, 1896.

² Gujarathi type was moulded in Bombay for the first time in 1797 by a Parsi printer in the service of the Bombay Courier Press, for the purpose of Gujarathi advertisements, which occasionally appeared in that paper.

issued newspapers and periodicals and the remainder performed job printing of various kinds. At the present date (1909) Bombay contains 120 printing presses.

The *Times of India* was founded in 1838, with the title of the *Bombay Times*. This paper was at first a bi-weekly, appearing on Wednesdays and Saturdays, and owed its origin, in great measure, to Lord Metcalfe's action of 1838, which granted freedom to the press in India and encouraged capitalists to embark upon journalistic enterprises. The syndicate, which founded it and which received much encouragement from the Governor, Sir Robert Grant, was composed of eleven European merchants in Bombay, Mr. (afterwards Sir) Jamsetji Jijibhoy, two eminent barristers and a member of the medical profession. Dr. Brennan, Secretary to the Chamber of Commerce, was the first Editor and was succeeded in 1839 by Dr. Henderson of the Elphinstone College, and for a few months by Dr. Knight of the Bengal medical service. In May 1840 Dr. Buist was specially despatched from Scotland to edit the paper, which during the eighteen years (1840-57) of his tenure of office changed its character considerably and expanded on the 2nd September 1850 into a daily paper. In December 1857 Dr. Buist resigned his post in consequence of a difference of opinion between himself and the proprietors regarding the policy of the paper during the Mutiny, and was succeeded by Mr. Knight, who witnessed in 1861 the alteration of the title of the journal to the *Times of India*.¹ In 1863 the editorship was offered

Leading
Newspapers.
*The Times of
India.*

¹ In 1858 Dr. Buist started a paper of his own the *Bombay Standard*, which was amalgamated in 1859 with the *Times* and was known for a few months as the *Bombay Times and Standard*. Similarly the *Bombay Telegraph and Courier* was merged in the *Times* in 1861. The *Courier* was the oldest Bombay newspaper, having been founded in 1790. During the early years of the nineteenth century it thrived under the proprietorship of Mr. Luke Ashburner of Bombay and Bhandup; and in 1847 it was amalgamated with the *Telegraph*. In 1872, eight years after his retirement, Mr. Knight commenced to publish the *Statesman*, which was also merged in the *Times* in 1873.

In 1861 the paper was purchased by Messrs. Knight and Mull from the native proprietors; and on the retirement of the latter Colonel Nassau Lees (1825) became sole proprietor. In 1889 Messrs. Curwen and Kane purchased the paper from his heirs, and they in turn gave place to Messrs. Bennett, Coleman & Co., who now own the paper.

through Sir Alexander Grant of the Bombay Educational Department to the famous Oxford scholar, Mr. Thomas Hill Green, who, however, was persuaded to refuse the offer by Mr. Benjamin Jowett, the Master of Balliol; and for a short period in 1853-5; the editorial chair was filled by Mr. Louis Jennings, who had journeyed to India as special correspondent of the *London Times*.¹ Robert Knight's successors were Messrs. Martin Wood, Grattan Geary, Henry Curwen, T. J. Bennett, C.I.E., who had previously been connected with the *Bombay Gazette*, and L. G. Frazer. The paper is now conducted by Dr. H. D. Reed, LL.D.

The original offices of the *Times of India* were located in Manekji Petit's buildings (now destroyed) near the end of the Colaba Causeway. Thence they were removed in succession to Rutherford street, Military square, in the Fort; to Bell Lane, Meadows street, opposite to what was known till 1915 as the Fort Chapel; and to Church Gate street. From about 1855 to 1898 the offices of the paper occupied a red-brick building, adjoining Messrs. Kemp & Co.'s shop, at the south end of Parsi Barat street; and were removed in the latter year to the building now occupied by the Royal Insurance Company, opposite to the Cathedral. In 1903 a final move was made to the *Times Building*, opposite the Victoria Terminus of the Great Indian Peninsula Railway Company, which was specially designed and erected for the proprietors.

The paper has described and commented upon the chief events in the history of India during the last seventy years. Among these may be particularly mentioned the 1st and 2nd Afghan wars, the conquest and annexation of Sind, the Abyssinian war, the famine of 1877-78, the Tibetan Expedition, the Delhi Coronation Durbar of

¹ Nettleship's Memoirs in T. H. Green's Works, Vol. III., p. 35.

² Winston Churchill's Life of Lord Randolph Churchill, Vol. II., 270.

³ This house is now (1909) occupied by Messrs. Mongini & Co. It stands on the site of an old house originally occupied by one Bomanji Kabraji and known as the "Gup House," from the fact that Bomanji and his cronies met on the verandah every evening to discuss the gossip of the day. (Mr. K. N. Kabraji's Reminiscences, republished in *Times of India*, 1901.)

1902-03, and the Indian Tour of their Royal Highnesses the Prince and Princess of Wales in 1905-06.¹

The *Bombay Gazette* was first published in 1791 under the editorship of Mr. Macklin, who was succeeded in 1810 by Mr. Fearon and a little later by a Mr. Adolphus Pope, who was Sheriff of Bombay in 1820. He yielded place in 1821 to Mr. Fair, who indulged in somewhat outspoken comments on current affairs and was eventually deported about 1823, in consequence of an article which gave umbrage to Sir Edward West, then Recorder of Bombay. During the early half of the nineteenth century the *Bombay Gazette* incurred considerable odium by its support of the missionary movement in general and of Dr. John Wilson in particular, and was actually boycotted by the Parsi community after the result of the litigation arising out of Dr. Wilson's conversion of two Parsi boys. Matters remained thus until 1840, when the paper passed into the hands of new proprietors, who altered its name to the *Gentleman's Gazette*. This title lasted, however, for twelve months only, and gave place once more to the old name when Mr. John Connell took his seat in the editorial chair. Being subsequently appointed Chief Presidency Magistrate, Mr. Connell found his opportunities as editor considerably curtailed and began to devote more and more of his leisure to the promotion of charitable and educational institutions;² and he was considerably relieved when Mr. J. M. Maclean came out to take his place in 1859. The latter, however, relinquished his post at the end of a year, and Mr. Connell continued to edit the paper until 1863, when he sold the business to Messrs. Maclean and Sharman. During the proprietorship of these two, the journal exercised a powerful influence on local politics and took a prominent part in internal affairs between 1860 and 1870, being to a great extent instrumental in effecting the reconstruction of the Bank of Bombay and in directing the improvements which followed the demolition

The Bom-bay Gazette.

¹ The letters on the Royal Tour, which appeared in the *Times of India*, received the honour of being adopted in a revised form as the official record of the Tour.

² The John Connell School on the Esplanade is the only existing monument to his philanthropy in Bombay.

of the old Fort. Among its best known contributors at this date were Sir Bartle Frere, Sir Alexander Grant, Mr. Anstey, Sir George Birdwood and Mr. Lockwood Kipling. Mr. Maclean also played no small part in the foundation of the Bombay Municipal Corporation, of which he was for many years an active member; and his policy was followed by Mr. Grattan Geary, to whom he sold the paper in 1880. After Mr. Geary's death, the journal was conducted by his widow and the present editor, Mr. G. C. Plinston, until 1906, when it passed into the hands of a syndicate formed in Bombay, which reduced its price from 4 annas to one anna.

The Advocate of India. The *Advocate of India* was founded by the late Dr. Thomas Blaney, C.I.E., in 1885 as an organ of the educated Indian population, and experienced very little success until 1894, when its present proprietor and editor took charge of it. The journal, which is published every evening, preserves an independent line on all matters of Indian and Anglo-Indian interest, and has on several occasions, notably in the matter of the treatment of the Muhammadan pilgrims to Mecca, aided the settlement of disputed questions of administration. The offices of the paper are situated in Apollo street, where the proprietors, Messrs. Gordon & Co., also publish the weekly *Sporting Age*, which first appeared in June 1906.

The Bombay Samachar. The *Bombay Samachar*, the oldest vernacular newspaper in India, was founded by Mr. Fardunji Marzban, the pioneer of native journalism in Western India, in 1822. Appearing first as a weekly, it was converted in 1832 into a daily paper, but was forced by lack of resources to revert to a bi-weekly issue in 1833. In 1855, however, it again appeared as a daily, and has remained so up to the present time. Since 1870 the paper has been the property of the Minocher Homji family, who conduct it for the benefit of all sections of the public. The tone of its articles is moderate, and it exercises a wholesome influence upon the Gujarathi press in outlying districts of the Presidency.

The Rast Goftar. The *Rast Goftar*, an Anglo-Gujarathi weekly paper, was first published in 1851 by a small body of Parsi residents, of whom the best-known is Mr. Dadabhai Naoroji,

M.P. Ten years later, after suffering considerable pecuniary loss owing to its progressive policy of reform, it was amalgamated with the *Satya Prakash* of the late Mr. Karsandas Mulji, and from that date up to 1902 it was edited by the late Mr. K. N. Kabraji. Save for a short period succeeding its first issue, the paper has always been printed at the *Daftari Askara* press, which was originally situated in Bazaar Gate street near the Bomanji Wadia fountain, and was thence removed to the modern Homji street (then King's Barrack lane), and finally in 1881 to its present premises in Cowasji Patel street. The *Rast Goftar*, which originally consisted of one sheet and has since been gradually raised to eight, has always represented the views of the educated reformers of the Parsi community and preserved an attitude of strict loyalty to the British Government.¹

The *Jam-e-Jamshed* first appeared as a weekly paper in 1831 and was converted into a daily in 1853. At its zenith it was the organ of the Parsi Panchayat and an authority upon all social questions affecting the Parsi community. Of late years, although still reflecting the views of that community alone, it has set itself in vehement opposition to the ideals and methods of the Indian National Congress.

The *Kaiser-i-Hind*, a weekly paper founded by Mr. F. C. Mehta in 1882, is notable as the first Parsi newspaper to inaugurate a special telegraphic service for itself from England, and its proprietors had the honour of invitation to the Press Congress held at St. Louis in 1904; while the weekly *Gujarati*, founded in 1879, is the most influential of Gujarat Hindu journals in Bombay and is a staunch upholder of the views of the Indian National Congress. One of the oldest and most influential Anglo-Marathi journals is the *Indu Prakash*, which was started in 1862 for the advocacy of social, religious and political reforms. In 1892 it

The Jam-e-Jamshed.

The Kaiser-i-Hind and other important papers.

¹ At a banquet held in 1901 to celebrate the jubilee of the paper, a telegram was received from H. E. Lord Curzon, the Viceroy, congratulating Mr. Kabraji upon his honourable conduct of the paper for the greater part of fifty years and upon setting "a standard of sound sense, sobriety, and loyalty in journalism, which is a credit to the Indian press."

appeared as a bi-weekly and in 1904 as a daily evening paper. Among its most distinguished editors have been the late Mr. Justice Ranade, the late Mr. Justice Telang and Sir N. G. Chandavarkar. Among illustrated papers conducted by natives of India, the best are the *Hindi Punch*, published weekly since 1888, and containing cartoons and articles on political, municipal and social questions ; the *Parsi*, published as a monthly magazine in 1905 and as a weekly since 1906, which represents the Parsi community and draws its contributors from both India and Europe; and *Men and Women of India*, which is published monthly as a record of social and sporting events in India, and contains a series of portraits of notable men and women of all communities, who have worked for the welfare of India. The weekly *Indian Spectator* and the monthly *East and West*, conducted by Mr. B. M. Malabari, are too well-known to require description.

APPENDIX I.

Table showing the Colleges and Schools in the City and Island of Bombay, the number of pupils in them on 31st March 1909.

NAME.	Number of pupils.	Total cost.
Arts Colleges.		
<i>Government.</i>		
Elphinstone College	365	93,218
<i>Aided.</i>		
Wilson College	519	76,929
St. Xavier's College	372	43,016
<i>Unaided.</i>		
The Techno-chemical Laboratory	41	8,829
Professional Colleges.		
<i>Government.</i>		
Law School	342	24,767
Grant Medical College	526	2,06,035
High Schools.		
<i>Government.</i>		
Elphinstone High School	630	54,066
<i>Aided (Recognized).</i>		
(European and Eurasian.)		
Cathedral High School	85	17,376
St. Mary's Institution	305	20,163
Bombay Education Society's High School, Byculla	19	20,312
Scottish Education Society's High School, Byculla	75	10,173
John Connon High School, Fort	148	8,877
<i>(English Teaching.)</i>		
Antonio de Silva's School, Dadar	560	11,033
St. Xavier's High School, Esplanade	1,311	58,895

NAM.		Number of pupils.	Total ex.t.
(Anglo-Vernacular.)			
Israelite High School ...	...	88	7,017
Wilson High School, Girgaum	...	460	16,013
Robert Money Institution, Esplanade	...	185	9,065
American Mission High School, Byculla	...	135	11,260
Anjuman-i-Islam High School, Esplanade	...	199	10,404
Byramji Jijibhoy Parsi Charitable Institution	...	322	12,927
Sir J. J. Parsi Benevolent Institution, Fort	...	348	18,055
St. John Night School, Umarkhadi	...	164	4,558
Esplanade High School, Frere road	...	565	24,148
St. Andrew's A.-V. School, Umarkhadi	...	125	6,671
Unaided (Recognized.)			
(Anglo-Vernacular.)			
Proprietary and Fort High School	...	295	9,362
Fort and Proprietary High School, Elphinstone Circle	...	402	21,722
Maratha High School	...	263	6,203
Gokuldas Tejpal High School	...	735	19,351
New English School, Hornby road	...	1,903	88,739
J. N. Petit Parsi Orphanage, Parel	...	156	11,528
Aryan Education Society's High School, Girgaum	...	1,186	22,881
Babu Pannalal Panamchand Jain High School for Boys	...	139	6,876
Tutorial High School	...	249	12,054
Middle Schools.			
<i>Government.</i>			
(Anglo-Vernacular.)			
Elphinstone Middle School	...	522	20,909
<i>Municipal.</i>			
Dongri 2nd Grade Anglo-Vernacular School	...	96	800
Khetwadi	"	71	956
Kamathipura	"	27	320
Bhuleshwar	"	56	597
Aided (Recognized.)			
(European and Eurasian.)			
Scottish Orphanage, Mahim	...	82	18,004
Indo-British Institution	...	96	7,635
Scottish Education Society's Colaba High School	...	29	2,539

NAME.	Number of pupils.	Total cost.
		Rs.
(English Teaching.)		
St. Joseph's School, Umarkhadi	62	1,792
St. Mary's Institution, Mazagon	218	10,314
Antonio D'Souza's School, Mazagon ...	149	4,061
St. Peter's English Teaching School, Mazagon	54	7,330
St. Teresa's School	104	4,498
(Anglo-Vernacular.)		
Prabhu Seminary, Thakurdwar	89	1,311
Framji Nasarwanji Anglo-Vernacular School, Khetwadi	88	2,682
General Education Institute, Dadar ..	344	5,721
9 Anglo-Vernacular portions of Night Schools	171	843
Lady Northcote Hindu Orphanage, Parel..	33	2,633
Proprietary and Fort High School, Chandan- wadi	135	3,920
Unaided (Recognized).		
(English Teaching).		
Jacob Sassoon Free School	255	10,899
Goan Union School, Dabul	262	8,573
(Anglo-Vernacular.)		
Gokuldas Tejpal Seminary	120	2,547
Mugbhat Private Anglo-Vernacular School.	62	796
Jijibhoy Dadabhai Charity Anglo-Verna- cular School, Khetwadi	76	1,429
Imam Ismaili Khoja Jamat	15	365
Parsi Seminary	21	276
Khoja Khan Mahomed Habibbhoy Anglo- Vernacular School	178	*
Anjuman-i-Islam, Nagpada	46	1,061
Girls' High Schools.		
Aided (Recognized).		
(European and Eurasian.)		
Cathedral Girls' High School	143	20,155
Convent School, Clare road	176	12,204
" " Fort	172	11,035
Bombay Education Society's Girls' High School	130	12,574
(English Teaching)		
Girgaum Girls' High School	148	13,05
Frere-Fletcher School	92	*

NAME.	Number of pupils.	Total cost.
(Anglo-Vernacular.)		Rs.
Young Ladies' High School	133	6,685
Alexandra Native Girls' Institution... ...	66	4,891
Empress High School	85	5,594
Princess High School, Chaupati	53	5,978
<i>Unaided (Recognized).</i>		
(Anglo-Vernacular.)		
Girton High School, Grant road	241	8,231
Bai Ratanbai F. D. Panday Girls' High School	94	4,603
Girls' Middle Schools.		
<i>Aided (Recognized).</i>		
(European and Eurasian.)		
B. B. and C. I. Railway School, Parel ...	29	1,960
(English Teaching.)		
St. Isabella's School, Matharpakhadi ...	51	1,183
St. Joseph's Girls' School, Cavel ...	130	6,185
St. Anne's Poor School, Byculla ...	102	3,221
Convent School, Lower Mahim ...	236	6,823
St. Joseph's School, Mazagon ...	161	3,109
(Anglo-Vernacular.)		
U. F. C. M. Girls' School, Gowalia Tank...	26	2,125
S. P. G. Mission Anglo-Vernacular Girls' School, Newwadi	*	*
Sir Cowasji Jehangir Anglo-Vernacular School	33	1,623
C.M.S. Anglo-Vernacular School, Girgaum	43	1,937
Z. B. and M. Mission Anglo-Vernacular School, Umarkhadi	19	1,179
Miss Bennett's Anglo-Vernacular School, Khetwadi	26	1,186
Students' Literary and Scientific Society's Schools...	113	1,206
<i>Unaided (Recognized).</i>		
(Anglo-Vernacular.)		
Merwanji Sethna Girls' A.-V. School ...	11	196
U. F. Church Mission Girls' A.-V. School...	43	1,619

NAME.		Number of pupils.	Total cost.
Primary Schools.			Rs.
Municipal	Boys (75)	...	7,924
Do.	Girls (23)	...	2,140
Aided	Boys (78)†	...	7,819
Do.	Girls (33)	...	4,094
Unaided (recognized)	Boys (14)	...	2,200
Do. (do.)	Girls (5)	..	602
			1,64,367
			52,290
			1,14,272
			77,156
			34,534
			9,275
Technical Training Schools or Colleges.			
TRAINING SCHOOLS FOR MASTERS.			
<i>Government.</i>			
College for teachers in Secondary Schools.		29	29,026
TRAINING SCHOOL FOR MISTRESSES.			
<i>Aided.</i>			
Girgaum Normal Class	...	...	6
SCHOOL OF ART.			
<i>Government.</i>			
Sir J. J. School of Art	...	...	383
INDUSTRIAL SCHOOLS.			
<i>Government.</i>			
Reay Art Workshops	...	...	(194)
<i>Municipal.</i>			
Two Municipal A.-V. Schools, Dongri and Khetwadi	...	...	(85)
<i>Aided.</i>			
American Mission Girls' Sewing Class	...	(75)	3,721
David Sassoon Industrial and Reformatory Institution	...	230	45,444
Victoria Jubilee Technical Institute	...	335	95,600
American Mission Laundry Class	...	(80)	4,540
Apprentices' Home, Byculla	...	21	7,622
<i>Unaided.</i>			
Technical Class of Jacob Sassoon Free School...	...	(110)	...
J. N. Petit Parsi Orphanage, Parel	...	44	4,754

† Includes the Institution for Deaf and Mutes, Nesbit road, Miss Millard's Blind School and Victoria Memorial School for Blind.

NAME.	Number of pupils.	Total cost.
		Rs.
COMMERCIAL SCHOOLS.		
<i>Unaided (Recognized).</i>		
Commercial Class attached to Byramji Jijibhoy Parsi Charitable Institution ...	43	484
Ayer's Night School of Commerce ...	23	2,210
DRAWING CLASSES.		
<i>Government.</i>		
Elphinstone High School	(454)	...
," Middle ,,,	(522)	...
<i>Municipal.</i>		
Two Municipal A.V. Schools, Dongri and Khetwadi	(167)	245
14 Drawing Classes attached to several Municipal Schools	(882)	...
<i>Aided.</i>		
34 Drawing Classes attached to several Aided Schools...	20 (2,450)	7,533
<i>Unaided.</i>		
5 Drawing Classes attached to 5 Unaided Schools	(744)	735
OTHER SPECIAL SCHOOLS.		
<i>Government.</i>		
Veterinary College	106	53,249
<i>Aided.</i>		
J. N. Petit Khetwadi Gymnasium	7	356
Sir D. M. Petit Gymnasium, Carnac road ...	101	1,596
<i>Unaided.</i>		
Gokuldas Tejpal High School Gymnasium.	(85)	180

APPENDIX II.

Table showing the number of pupils by sex and religion in Bombay in 1880, 1880 and 1909.

	1880.						1909.						
	Hindus.	Muslims.	Parisis.	Christians.	Others.	Hindus.	Muslims.	Parisis.	Christians.	Others.	Females.		
Colleges . . .	62 ..	1 ..	66 ..	..	27 ..	39 ..	6 ..	28 ..	..	61 ..	11 ..	55 ..	
High Schools . . .	239 ..	15 ..	615 ..	..	441 ..	321 ..	1153 ..	70 ..	763 ..	..	5077 ..	17 ..	786 ..
Middle Schools . . .	214 ..	19 ..	585 ..	..	441 ..	159 ..	42 ..	1596 ..	4 ..	164 ..	51023 ..	89 ..	205 ..
Primary Schools . . .	478 ..	66 ..	59 ..	485 ..	..	5 ..	288 ..	101 ..	185 ..	8 ..	716 ..	901 ..	12 ..
Special Schools ..	76 ..	26 ..	16 ..	..	20 ..	..	185 ..	70 ..	..	50 ..	..	..	50 ..
											804 ..	2 ..	133 ..
											16 ..	101 ..	10 ..
											5 ..	5 ..	5 ..

APPENDIX III.
Chief Libraries of Bombay.

Names.	Place.	Date of opening.	Number of Books.	Members.	Monthly Fees.		Yearly Income.
					Rs. as.	M.	
Native General Library	"	"	24,500	1,600	2	0	9,000
J. N. Petit Institute	"	"	21,000	2	0	6	39,000
People's Free Reading Room and Library	"	"	8,000	Free	0	6	"
Native Umiashanker Library (1)	"	"	1,591	8,000	"	6	"
Pandit Gaitulalji Library (Free) (2)	"	"	1,874	6,000	1	0	2,100
Mujibhoy Jivraj Khoji Library	"	"	1,900	6,000	Free	6	"
Ashumati Islam Library	"	"	1,905	6,000	0	8	4,700
Mulla Firoz Library	"	"	1,854	5,000	1	3	600
Sir D. Petit Khanda Moholla Library	"	"	1,831	4,500	0	4	1,000
Kamathipura Telugu Library	"	"	1,870	4,000	1	0	800
Dr. R. G. Bhandarkar Free Reading Room and Library	"	"	1,500	2,000	Free	6	"
J. N. Petit Baharkot Improvement Library	Market	"	1,869	1,300	0	6	"
J. N. Petit, Girgaum	"	"	1,863	1,000	0	6	"
Dhanjibhai Pramji Library	"	"	1,860	500	0	6	"
Khoja Chaudhary Noor Mohamed	"	"	1,900	300	Free	6	"
Dababhai Nowroji Free Library	"	"	1,900	300	0	3	"
Hindu Union Club	"	"	1,875	80	0	3	"
Thakurdwar	"	"					

¹ The original name was Bhuleshwar Library. It was changed in 1902 when the contributors of the Javerial Umiashanker Fund gave the amount to the Library.

² Contains about 500 old Sanskrit books.

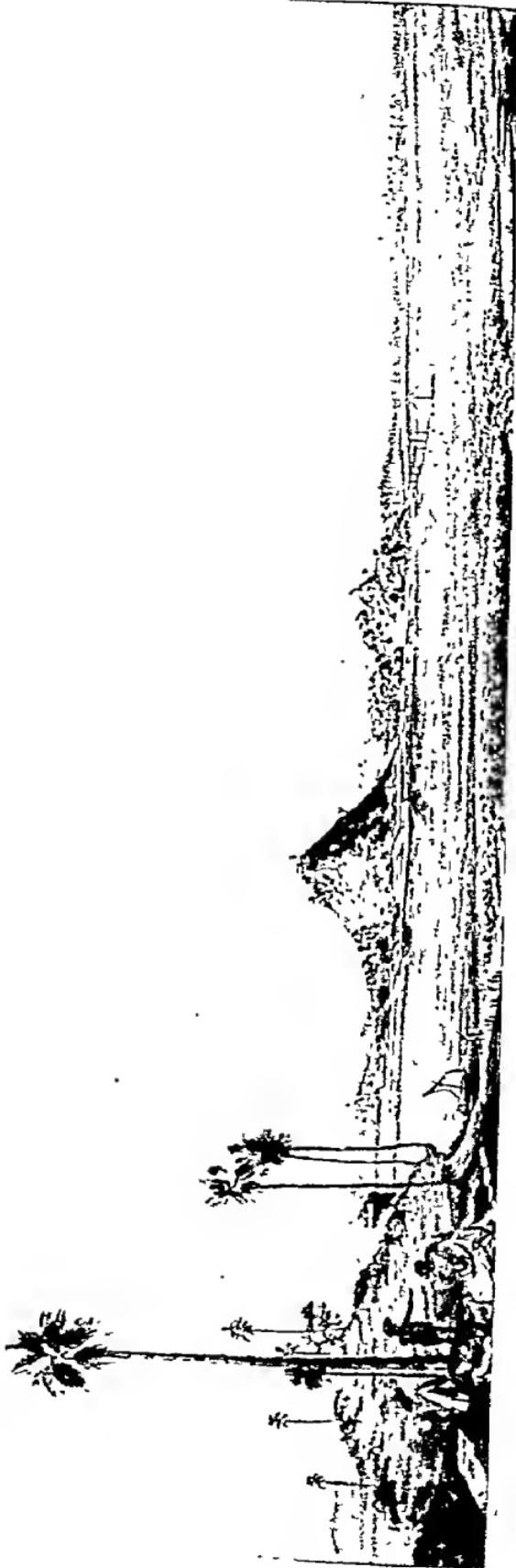
³ Was burnt in 1900 when 4,000 books were burnt.

Note.—This list only includes the Libraries registered by the Educational Department. The Chief Libraries of Societies, are e.g., the

B.B.M.A. Society, containing about 90,000 books, the Sassoon Mecha-nics' Institute containing 14,000 books, the Blavatsky Lodge containing 2,000 books, and the Bombay Natural History Society's Library containing 2,000 books. The other libraries are Cercle Littéraire Bibliothèque Dinshaww Petit, Metropolitan Circulating Library, Gramm Circulating Library and the Jain Religious Room and Library.

VIEW OF BOMBAY FROM SALSETTE.

Painted by J. Winter in 1790.



CHAPTER XII.

HEALTH.

Little evidence exists to throw light upon the sanitary condition of Bombay during the period preceding its cession to the English Crown by the Portuguese. Heitor da Silveira named it the "Island of the Good Life," which he would scarcely have done, if the climate had proved very deleterious, while Fryer in 1673 spoke of the country people and Portuguese in old days living to a good old age, which he believed to be largely due to their temperate habits.¹ But subsequent to the cession and up till the close of the first decade of the 18th century, the island acquired an evil reputation and the mortality, particularly among the English, rose to an alarming figure. "I reckon the people of Bombay," wrote Fryer in 1673, "walk in charnel-houses, the climate being extremely unhealthy, as first thought to be caused by bubsho, rotten fish; but, though that be prohibited, yet it continues as mortal. I rather impute it to the situation which causes an infecundity in the earth, and a putridness in the air; what being produced seldom coming to maturity, whereby what is eaten is undigested; whence follow fluxes, dropsy, scurvy, barbiers, gout, stone, malignant and putrid fevers, which are endemic diseases."² More fatal than all was a disease known as "*mordisheen*" to the Portuguese, which appears to have been choleraic in nature.³ Throughout the entire period between 1670 and 1710 there are continual references in official records to

Sanitary condition.

¹ Fryer's New Account, 69. He mentions the drinking of "phul arrack" and "foul women" as among the chief causes of disease in his day.

² *Ibid.* Bombay Gazetteer. Materials, III. 542.

³ Mordisheen was doubtless a corruption of the Marathi *Modsi*, from *Modane*, to break, in allusion to the internal agony which characterized the attacks. It was further corrupted by the English into *Mort de Chine* or the Chinese death (*vide* Yule's Hobson-Jobson). The treatment of this disease was almost more terrible than the disease itself, consisting of the application of a red-hot iron ring about an inch in diameter to the patient's stomach.

the great unhealthiness of the island,² and on more than one occasion the Company's servants asked to be exempted on this account from serving in Bombay.³ Many circumstances were not improved by the fact that the island was often destitute of a physician⁴ and that the consignments of medicines, which were spasmodically sent out by the Court of Directors, often proved to be bad.⁵ Philip Gyfford and John Petit, writing in 1677, remarked :—“ We have buried upwards of 50 men, & new men ; they die generally of fluxes which for the most part takes all it seizeth by reason of the bad diet and lodging and ill-government of our people in their sickness, and also they living so remote they cannot be looked after as they ought.” In 1690 it was reported that there were only 35 Englishmen in Bombay, who were not fit, while in the following year there were only five English servants alive and all of them *hors de combat*.⁶

Various reasons for the unhealthiness of the colony were put forward by the Company's representatives in Bombay. Writing in 1671 to the Court of Directors, they opined that it was due to the habit of manunting the cocoa-nut palms with putrid fish,⁷ while in 1673 Augst

² Commissioners at Bombay to Surat, October 30, 1653, described great sickness among the soldiery and emphasized want of medicines, “ especially Marmalade of Bassora for the general epidemical disease of this place.” Bombay Council to Court, November 16, 1671; Surat to Court, January 31, 1683; Surat to Court, December 13, 1690; Bombay to Court, Jan^{uary} 1, 1676.

³ Sir John Child, when appointed Accountant of Bombay in 1676, refused to go there. *Bombay Gazetteer, Materials*, III, 30.

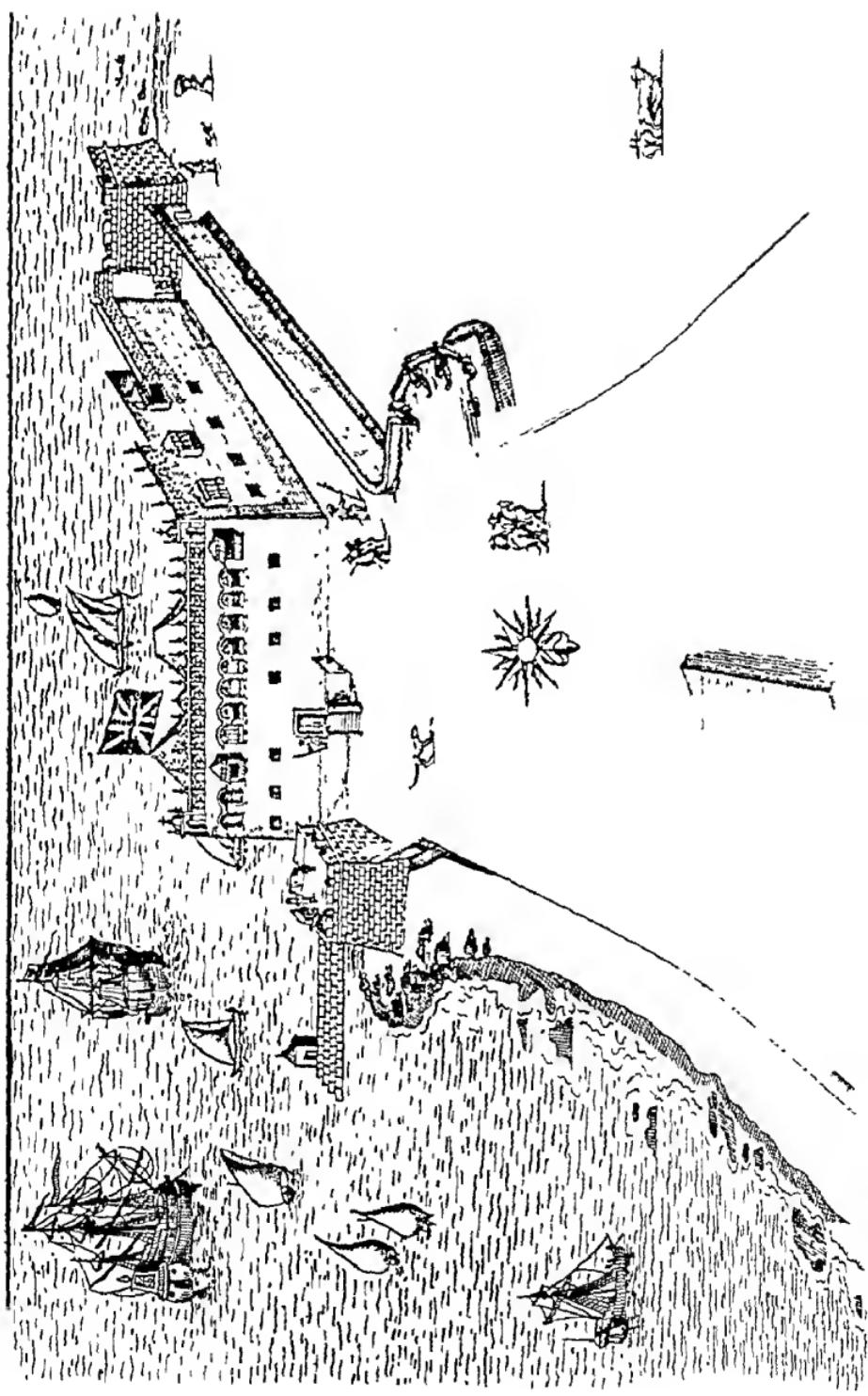
⁴ The first physician was Dr. Wilson, appointed in 1671. In 1680 a Surgeon on 35 shillings a month and an Assistant on 25 shillings a month were sent out from England. See also Edward's *Rise of Bombay*, p. 523.

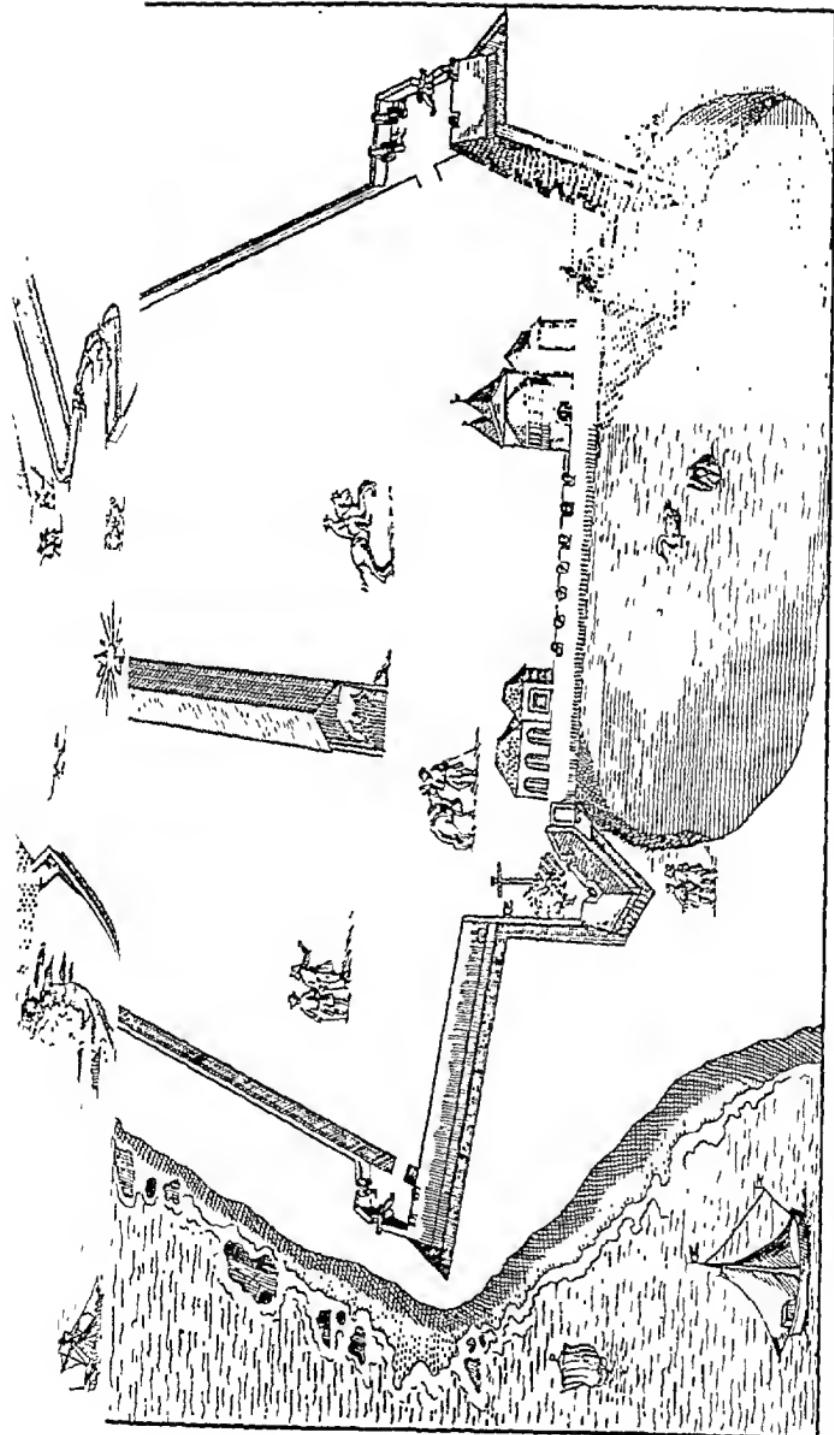
⁵ Court to Surat, March 19, 1672.

⁶ Surat to Court, December 13, 1691.

⁷ Surat to Court, 1691. Cobbe in his book on the Colony of Bombay remarked that James Blamey lived on the island for 22 years and Aislaic for 28 years, but that such instances were not common. Cobbe's predecessor, Watson, died in 1670, after a year of his arrival.

⁸ Hamilton writing of Bombay in 1700 remarks that “ its ground is sterile and not to be improved. It has but little good water or soil, and the air is damp but not healthy, which is extremely injurious to their digestion & excretion, attended with a violent, acute & severe attack of the sea-sickness. They being liable to the trees poison and excrements, especially in the morning, there is





*Reproduced from Orington's Voyage.
THE DELINEATION OF HIS MAJESTY'S CITADEL AND FORT OF BOMBAY.*
(April 2nd, 1668.)

remarked in his report that after the first intermission of the rains in May or June and after their total ceasing in October the air and water are unwholesome by reason of the crude pestiferous vapours exhaled by the violent heat of the sun into the air and vermin created in the wells and tanks which renders those months most sickly to the inhabitants and especially to Europeans.¹ One of the chief reasons was doubtless the gradual silting-up of the creeks which divided Bombay into a group of islets. At high-tide the sea swept through the breaches, overflowed the major portion of the island, and laid a pestilential deposit highly productive of malaria; and the conviction of the truth of this suggestion led the Court of Directors between 1684 and 1710 to constantly emphasize the need of stopping up the breaches (*e. g.* at Varli) and reclaiming "the drowned lands." Added to such natural causes was the dissolute life led by the majority of Europeans at this epoch. "I cannot," wrote Ovington, "without horror mention to what a pitch all vicious enormities were grown in this place. Their principles of action and the consequent evil practices of the English forwarded their miseries and contributed to fill the air with those pestilential vapours that seized their vitals and speeded their hasty passage to the other world. Luxury, immodesty and a prostitute dissolution of manners found still new matter to work upon."² Between 1690 and 1708 circumstances were aggravated by a violent epidemic of plague which helped to justify the dictum that in Bombay "two monsoons were the age of a man", and which forced from Sir Nicholas Waite the cry :—"We are six, including your council, and some of us often sick. It is morally impossible without an overruling Providence to continue

generally seen a thick fog among those trees that affects both the brains and the lungs of Europeans and breeds consumptions, fevers and fluxes."

The Revd. John Ovington also wrote in 1689 that "fish manure is a mortal enemy to the lives of Europeans. We arrived here at the beginning of the rains and buried of the 24 passengers we brought with us above 20, before they were ended and of all our own ship's company above 15. The prodigious growth of vermin and of venomous creatures at the time of the monsoons do abundantly demonstrate the malignant corruption of the air."

¹ Aungier's Report. December 15, 1673.

² Edwardes' Rise of Bombay, 124.

longer from going underground, if we have not a large assistance."¹

The excessive mortality caused the greatest anxiety to the Court of Directors, who endeavoured to afford temporary relief to their factors by the despatch of medicines and Surgeons from home.² They also advised the Bombay Council to issue orders prohibiting the "buckshawing" of the toddy trees in the Mahim and Varli woods, to allow the free perspiration of the western breeze, to stop the breaches, to burn continual fires and to put chalk in the drinking water.³ Accordingly in 1708 fish manure was universally prohibited, dry manuring being permitted up to 1766 when it was discovered that the indulgence was turned to bad uses, and this practice also was discontinued: while by 1720 a dam had been constructed across the Great Breach at Mahalakshmi, and a considerable area of marshy ground had been drained.⁴ This gradual reclamation of land from the inroads of the sea coupled with better medical attendance

¹ Ovington's Voyage to Surat.

² Edwardes' Rise of Bombay, 124. The plague appeared in Aurangzeb's camp in 1683 and 1689; at Surat in 1684 and 1690; at Bassein in 1690, and in Bombay at intervals from 1689 to 1702. Dr. Gemalli Carteri, who visited Bassein in 1695, described it as "exactly like a bubo, and so violent that it not only takes away all means of preparing for a good end, but in a few hours depopulates whole cities" (Churchill's Voyages IV., 191). A letter from Bombay to the Court of 1st June 1696 mentions that Bombay had had no plague that year, but that it was very violent in Bassein, Thana and Chaul. Nevertheless, there were at that date on the island only 27 men who were not sick.

³ Ovington's Voyage to Surat, 1689.

⁴ Grose referring to this period in 1750 writes:—"Bombay had long borne an infamous character for unhealthiness. It was commonly called the burying-ground of the English; but this was only until an experience, bought at the expence of numbers of lives, had rendered the causes of such a mortality more known and consequently more guarded against. Among others the principal causes doubtless were first the nature of the climate, and the precautions and management required by it not being so sufficient as they now are. Formerly, too, there obtained a practice esteemed very pernicious to the health of the inhabitants, employing a manure for the cocoa-nut trees that grow in abundance on the island, consisting of the small fry of fish and called by the country name "buckshaw", which was undoubtedly of great service both to augment and meliorate their produce. * * * * There are some, however, who deny it and insist on the ill consequences of this manure to be purely imaginary, or at least greatly exaggerated. But all are agreed that the inhabitations in the woods or cocoanut groves are unwholesome from all wanting a free current through them and from the trees themselves diffusing a

and a more temperate style of living introduced a considerable change for the better, and by the middle of the 18th century, Bombay had not only lost entirely her former reputation for insalubriety but was even accounted a tolerably healthy station. Grose, writing in 1750, remarked, "the climate is no longer fatal to the English inhabitants as it used to be, and is incomparably more healthy than that of many of our settlements in India. The most common disorders are fever, blood-fluxes, cutaneous eruptions and a sort of ulcer called ringworms. The barbiers, a violent disorder that generally ended in rendering all the limbs paralytic, and the mordechin which is a fit of violent vomiting and purging that often proved fatal, are distempers hardly now known on the island. In short this place, the name of which used to carry terror with it in respect to its unhealthiness, is now no longer to be dreaded on that account, provided any common measure of temperance be observed, without which the tenure of healths in any climate must be hazardous."¹ In spite of Grose's remarks, however, the sanitary condition of

kind of vaporous moisture unfavourable to the lungs, a complaint common to all closely wooded countries. There has also been another reason assigned for the island having grown healthier from the lessening of the waters by a breach of the sea being banked off. This however does not seem to me a satisfactory reason. There is still subsisting a great body of salt-water in the inside of the breach, the communication of which with the sea being less free than before the breach was built must be in proportion more apt to stagnate and breed noxious vapours. The improvement is due therefore more to different diet and manner of living of the Europeans, and also to the place being provided with more skilful physicians than formerly, when there was less niceness in the choice of them. Surgeons and Surgeons' mates of ships, and those none of the expertest, used to be admitted almost without any, or but a superficial, examination. The same negligence was also observed with respect to the gallies and other armed vessels of the Company in those parts. The pay was too slender to invite into such service any capable persons. Mr. Phipps, one of the former Governors, wherein he proposed making retrenchments by way of currying favour with his masters at home by the falsest and most ominous economy, observed the Surgeon's pay rated as Rs. 42 (that is five guineas). Mr. Phipps said the figures are by some mistake transposed and curtailed the pay to Rs. 24."

¹ Ives, who visited Bombay towards the middle of the eighteenth century, says—"The island of Bombay has of late been rendered much more healthy than it was formerly by a wall which is now built to prevent the encroachment of the sea, where is formed a salt marsh, and by an order that none of the natives should manure their cocoanut trees with putrid fish." (*Voyage from England to India* by Edward Ives, 1754).

Bombay was far from perfect. In 1757, for example, there was a serious epidemic among the labourers employed on the fortifications, which necessitated the appointment "of a country doctor,"¹ whose medicine, it is satisfactory to note, met with great success; while little or no attention was paid by the inhabitants to the advice and orders of the special officer, styled "Scavenger," who was appointed about this date to supervise the cleansing of streets. In fact, according to a consultation of the 18th November 1757, the town had become so dirty that the Bombay Government decided to appoint a member of the Board to the office of Scavenger and to defray the cost of a sufficient number of labourers and scavenging carts by a tax upon the townspeople. The mortality, at this date, was also high. Ives, writing in 1754, notes that "there were seldom less than 3 or 4 burned every night near the water's edge under Malabar Hill," and at the close of the eighteenth century the mortality was about 500 per month.

At the beginning of the nineteenth century it appears from statistics of deaths collected by the Police that the average annual mortality varied between 4,000 and 8,000, this figure rising in 1803 to 26,000 in consequence of the great famine in the Konkan and the resultant immigration of a very large number of famishing and moribund people.² The most common causes of death were fever and liver complaints, and Viscount Valentia, who was in Bombay in 1809, records the fact that the loss of the use of the limbs was a not infrequent result of the land breeze which blew every evening, "bringing with it noxious vapours from the rank vegetation which springs up in the marshy boundary of the bay immediately after the rains are over."³

In 1812 a definite attempt to secure the better con-

¹ *Bombay Gazetteer. Materials*, III, 554.

² Niebuhr, who visited Bombay in 1763, remarks that the island was much healthier than it was formerly, and that this resulted chiefly from the building of vellards to shut out the sea. The new Hornby Vellard was built between 1771 and 1784.

³ The mortality figures for 1803 and 1805 were respectively 8,000 and 10,000. The famine affected the city death-rate in both years. (*Trans. Bombay Literary Society* 1819).

The Wonders of Ellora by T. B. Seely, Captain in the Bombay Native Infantry. 1825, pp. 3, 4, 5.

servancy of the town was made by the passing of Rule, Ordinance and Regulation I, which empowered the Justices of the Peace to check nuisances on roads and thoroughfares and make structural improvements in the streets of the town. The general conservancy rested with the Court of Petty Sessions, which had to obtain the sanction of Government to all improvements that seemed to it necessary. These arrangements apparently met with some success ; for Captain Seely, who was in Bombay in 1825, remarked that "the climate of Bombay is preferable to most parts of India, having a refreshing sea-breeze, commonly called from its healthful effects "the Doctor." There is now very little wood on the island, no marshes, and but few large pools of stagnant water. To these causes much of the sickness that prevails in other parts of India must be attributed and the salubriety of Bombay caused it to be resorted to by invalids from the other Presidencies and the interior." A further step forward was taken in 1845 when a Board of Conservancy was established to supervise sanitary and other measures for the improvement of the public health ; but the activities of the board were somewhat curtailed by the fact that they were not vested with legal authority to check nuisances. In consequence Act XIV of 1856 was promulgated which gave the necessary legal status to the board, and bye-laws under it were framed. Two years later (1858) however the board had fallen into considerable disrepute, in consequence largely of the venality of its inferior servants,¹ and a new body corporate, composed of three Municipal Commissioners, was appointed to supervise the conservancy of the town. Finally on the 1st July 1865, the triumvirate of Municipal Commissioners was superseded by a new Municipality, which was charged with the entire control of the urban administration, the executive power and responsibility being vested in a Municipal Commissioner appointed by Government for a limited term of years. At the present date the sanitary welfare of the city is supervised by an Executive Health Officer, subordinate to the Municipal Commissioner and the Municipal Corporation.

¹ Valentia's Travels II.

In spite of the fact that the city contains many insanitary areas and has a very large low-class population, the Municipal administration of the last thirty years has gone far towards improving its general sanitary condition. Cholera for example, which was practically epidemic during the first half of the nineteenth century, and was responsible for very great mortality, has appeared only spasmodically since 1866, while the demolition of the walls of the old Fort and the ramparts, which was carried out at the instance of Sir Bartle Frere, the removal of palm-groves and the filling-up of old tanks and wells has done much to reduce the fever mortality. On occasions fever has claimed a large toll of human life; for example between 1863 and 1866, when commercial activity led to an unexampled immigration of the labouring classes, and again in 1877 when the city was filled with famine-stricken people from the Deccan, Gujarat and Rajputana. But apart from the mortality engendered by special and temporary circumstances of the above nature, the health of the city has been largely improved by the more recent achievements of Municipal administration; guinea-worm, for example, which was once very common and led to the abandonment of Matunga as an artillery station,¹ as well as bowel-complaints have been much reduced in prevalence and severity by the provision of a regular and copious water-supply, which has taken the place of the sewage-polluted supply, formerly drawn from the tanks and wells of the island;² while the construction of solid bandars, harbour-works and roads for the original foul and muddy foreshore, the substitution of an underground drainage system for the old uncovered drains and sewers, the more careful scavenging of streets and roads, the introduction of building bye-laws and the supervision of individual houses, the removal of offensive trades to the north of the island, and the introduction since 1877 of compulsory vaccination, have severally contributed towards counteracting the high mortality which would otherwise have prevailed among a very numerous and heterogeneous population. Since 1902 also the Municipality has maintained registration offices with dispensaries attached to

¹ Trans. Med. and Phys. Soc. II., 1853-54 p. 56.

² See article on Water-supply in Chap. X.

them in the various districts of the city, the medical officers in charge of them being charged with the duty of professionally attending and prescribing for the poorer classes free of cost;¹ while a certain number of nurses and properly-trained midwives are also entertained for the benefit of the female population.

In spite however of the gradual improvement introduced during the last thirty or forty years, Bombay is still characterized by a high rate of mortality at certain seasons of the year. Its unhealthiness can be traced to the existence of insanitary slum-areas, which are low-lying and water-logged during the monsoon, and which contain many old buildings, unfit for human habitation. The houses in these areas look on to tortuous and narrow lanes and are ill-ventilated, dirty, dark and overcrowded. Many of the houses have no plinth and lie below the level of the street, which renders the ground-floors perpetually damp. The privies in such areas are usually adapted to the basket system, which permits of much excreta flowing into the open drains. The drainage indeed in some places is exceedingly defective, while in others the houses lie close to large godowns for the cleaning and storage of grain which serve as the breeding-places and playgrounds of rats. Insanitary bullock-sheds also, which give rise to the saturation of the soil with dung, are to be found in the immediate vicinity of houses occupied by the lower and less cleanly classes of the population, and proper drainage cannot be effected inasmuch as the houses often lie below the level of the sewers, and the level of the sub-soil water is unusually high. A permanent amelioration of these conditions can only be effected by the gradual demolition of such areas, the erection of suitable dwellings for the poor, the provision of ventilation in and around dwelling-houses, the paving and cementing of all passages between houses, the abolition of the present privy system in favour of the water-carriage system, the regular and systematic inspection of houses, the provision of washing and bathing places in the street and the strict enforcement of the

¹ These Municipal dispensaries are maintained at an annual cost of about Rs. 4,000 and treated 86,687 patients in 1907.

ordinary sanitary laws. These measures are being gradually introduced.

Diseases.

The chief diseases prevailing in Bombay from season to season are small-pox, cholera, fever, dysentery, diarrhoea, diseases of the nervous system, phthisis and diseases of the respiratory and digestive systems and plague. During the five years ending 1920, the average annual number of deaths arising from these causes was as follows :—

Diarrhoea and Dysentery	3,483	or 5·2 p.c. of total mortality.
Diseases of nervous system	2,910	or 4·5 " "
Phthisis	" "	2,713 or 4·65 "
Other diseases of respiratory system	" "	9,367 or 22·0 "
Plague	" "	8,393 or 19·7 "
Fever	" "	3,519 or 8·2 "
Cholera	" "	303 or 1·1 "
Small-pox	" "	803 or 1·8 "

Diseases of the respiratory system are numerous among infants in consequence chiefly of the imperfect ventilation and insanitary condition of many houses. Cases of zicker and of Malta fever have sometimes been imported, as for example, in 1891 and 1900, but their spread was checked by very stringent measures.

Cholera.

Cholera visited the island frequently during the early portion of the 19th century.¹ In September 1846 it carried off 5,000 people and re-appeared in rather milder form in the following year. During 1848, its effects were hardly noticeable, but about the middle of August 1849 it was again introduced from the Deccan and Konkan, and by the end of the year had been responsible for 2,000 deaths. During the next five years it was practically epidemic, the annual mortality reaching a maximum of 5,485 in 1851. Between 1855 and 1858 the mortality gradually declined, but rose again to 2,000 in 1859. On this occasion the disease was introduced from Wai in Satara District, through the Konkan, and prevailed in the city till about the middle of 1860, when it slowly subsided. The respite was however brief; for in November of the latter year it suddenly re-appeared among the families of the sepoys

¹ See *Bombay Courier* August—October 1818. Between August 1818 and August 1819, 2,42,771 persons were attacked with cholera. *Ibid.* October, 1819; May, 1821 and June 1821.

belonging to the native regiment on the Esplanade and carried off more than 400 persons in December and about 600 in January 1861. Throughout 1862 it was responsible for about 200 deaths a month on the average, and after a partial subsidence in February 1863 it suddenly re-assumed epidemic form in December of that year, and killed 4,800 persons during 1864. Between 1865 and 1875 the annual mortality from cholera stood at roughly 300; but in 1877 a great influx of people from the famine-stricken districts of the Presidency introduced it once again in epidemic form. A similar immigration took place in 1900, when more than 4,000 persons died in the city of the disease. The few cases that now occur usually appear between July and September, and are carefully watched by the urban health authorities, who on receiving information of an outbreak in the Deccan or elsewhere endeavour to impose upon the people such precautionary measures as the boiling of water and milk before use, the prohibition of the use of well-water for drinking purposes and of the consumption of over-ripe fruit; the cleansing and disinfection of drains, *gallis*, etc.; the evacuation of infected houses and the early demand for medical aid. The city is always liable to sudden infection by persons wandering from the great religious fairs and gatherings, which take place in various parts of the Presidency; but in consequence of the provision of a proper water-supply and the more effective control of conservancy and sanitation now maintained, cholera has become less common and less virulent than in the earlier period of the last century.

Dysentery and diarrhoea flourish in the dirtier localities, and arise from the irregular and insanitary habits of the people. The poorer classes often neglect to cover their food, thus allowing full scope to the taint of flies, while their children are fed irregularly upon an unsuitable diet. Tarwadi, Dongri, Varli, Kamathipura, Tardeo, Mahim, Byculla and Sion are the areas in which these diseases chiefly take root, while among classes the Native Christian is a prominent sufferer owing to his practice of residing in over-crowded *koors* or clubs with a common mess. Diseases of the respiratory system and phthisis, which annually

*Other
diseases.*

carry off about 13,000 persons, arise from the faulty construction of houses, absence of light and ventilation, and the feeble stamina of children. Mill-operatives are peculiarly liable to pulmonary troubles, owing to the varying temperatures to which they are subjected and to the inhalation of dust particles. These diseases are most prevalent among the Muhammadan and Hindu lower-class population, in particular among Muhammadan females, whom the *pardah*-system debars from enjoying the full benefit of the open air. The mortality is highest in and Nagpada, Kamathipura, Chakla and Byculla. Diseases of the nervous system appear to attack chiefly Parsis, Musalmans and Native Christians, and are more prevalent in Dhobi Talao, and Nagpada and Chakla than elsewhere. The annual mortality is about 2,000.

Small-pox.

Small-pox is far less prevalent than it was in earlier years.¹ Between 1850 and 1877 it was an annual epidemic, introduced as a rule by Muhammadan pilgrims arriving in the city on their way to Mecca,² and was responsible for about 1,000 deaths every year. The maximum was reached in 1876, when 3,174 people died of the disease. Since the passing of the Vaccination Act of 1877, which rendered vaccination compulsory in the city, small-pox has assumed epidemic form on five occasions only, namely in 1883, 1900, 1903, 1905 and 1908. The average annual mortality for 33 years since 1877 has been 522. Early notification of possible outbreaks, coupled with continued efforts to popularise primary vaccination and re-vaccination have done much towards ridding Bombay of a disease which was once unusually virulent. The recent steps taken by Government to erect pilgrim-camps, and thus prevent the uncontrolled distribution of pilgrims throughout the city will go far towards lessening the risk of infection.

Fever.

Excluding plague, the chief scourge in Bombay is fever. In old days, before the introduction of improvement schemes and the immigration of the industrial classes, fever originated in the impurity of the water-supply, de-

¹ For further details, see article on Vaccination.

² Times of India, 17th November 1869. Paper read at the rooms of the East India Association by Mr. Tait on the population and mortality of Bombay.

fective drainage, and in the marshy condition of the soil resulting from the unchecked inroads of the sea. Subsequent to 1860, when the labouring classes and immigrants from famine-areas commenced to annually seek the city in search of work and food, the mortality was largely augmented. In 1862 for example the number of deaths from fever was 7,000, and rose to 9,000, 12,000, 19,000 and 10,000 in the next four years. The poorer classes, who had been enticed hither by the prospect of lucrative employment during the share mania, were the greatest sufferers and succumbed to the hard work, exposure, want of nutritious food, the vitiated air of the warrens in which they were forced to reside and the dissipation induced by the receipt of high wages, which jointly characterized that period. In 1876 Bombay was first brought into contact with famine fever, the chief peculiarity of which is that it is usually most prevalent at seasons when there is least malaria and declines when remittent fever begins to increase. The unusual atmospheric conditions of Bombay augment the mortality among those who seek refuge in the city, and together with the overcrowding resulting from limited accommodation are responsible for the active propagation of fever in its various forms. A pure and abundant water-supply and the fresh sea-breeze which blows athwart the island, are the two chief agents in checking the further spread of fevers, which find ample chance to flourish amid the squalor of the poorer quarters. The chief types of fever are enteric fever, malaria, ague, remittent and relapsing fevers. In 1909, 2,800 deaths from fever were recorded, of which 92 were ascribed to enteric, 293 to malaria, 2,322 to ague and remittent fever, and 93 to relapsing fever. Enteric fever is mainly spread by the water in milk, by oysters and other shell-fish and by uncooked vegetables, which have been exposed to infection during growth. Leakages from Bhandarwada reservoir are in some degree responsible for the prevalence of malarial mosquitoes, which are very prevalent in Chakla, the Esplanade, Mandvi, Umarkhadi, the Market and Walkeshwar sections. Mazagon, Tarwadi and Byculla have a very low death-rate from malaria, but are notorious for the prevalence of ague and remittent fever, which are due possibly to the

fact that these areas are not properly drained and contain many cess-pools. The type of fever most prevalent in Dongri is relapsing fever, which is caused by overcrowding, filth and starvation, which exists to a marked degree in this area. Typhoid attacks chiefly Europeans and Eurasians, and natives rarely suffer from this type of disease.

Plague.

Plague, which has caused such havoc among the population during the closing years of the nineteenth century was first officially recognized in September 1896, when a genuine case of the bubonic type was discovered in Mandvi in a house facing the north side of the Masjid bridge. As mentioned above Bombay suffered from this disease during the closing years of the seventeenth and the opening years of the eighteenth century; and records exist to show that about the year 1832 the native population of Bombay was ravaged by a disease closely akin to plague. The phenomena preceding the outbreak of the disease in 1896 were briefly the following :—

- (1) An excessive rainfall (*i.e.*, 15 inches above the average) which lasted for only half the normal period.
- (2) A mean annual temperature higher, with the exception of a single year, than it had been during the preceding fifty-one years.
- (3) An abnormally high level of sewage after heavy rain in the arterial sewers of the city.
- (4) Increased humidity.
- (5) The existence of masses of wet grain in dark granaries situated beneath human dwellings.
- (6) A daily balance of about 5 million gallons of water in the soil—a balance indicating danger at any time.

After the first genuine case had been discovered,¹ the disease spread rapidly and by December the mortality of the city had attained alarming dimensions. Measures designed to control the spread of the epidemic were

¹ Dr. A. G. Viegas, a member of the Municipal Corporation and the Standing Committee, was the first person to draw public attention to the nature of the disease (Michael's History of the Corporation, p. 189).

entrusted to a Special Plague Committee appointed by Government and invested with very full powers. Attempts were then made to enforce the segregation of persons who had been in contact with a plague-patient, the removal of the patients to some properly equipped hospital and the disinfection of clothing and premises. These measures were essentially unpopular, and, besides adding a stimulus to emigration on a large scale, the population fleeing as much from an unreasoning fear of all forms of control as from terror of the epidemic, eventually led to riots and bloodshed. The position was one of extreme difficulty. The sanitary service of the city was in the hands of *halalkhors* or scavengers; and had they joined the general exodus, the city would in a short time have been rendered uninhabitable. At the same time the exodus of panic-stricken residents threatened to carry the plague over the whole of the Presidency and even beyond its limits. Attempts were made to enlist the co-operation of the leaders of the various native communities, and by degrees calmer feelings began to prevail. With the subsidence of the epidemic in the hot weather Bombay tended to resume its normal aspect. But in the interval the exodus had been enormous (it was roughly estimated at one quarter of the population), the disease had been spread far and wide by heedless fugitives, business had almost been brought to a standstill, and the weekly mortality had risen to the appalling figure of 1,900. Annually since the fatal year of 1896 plague has been epidemic in the city. The highest rates of mortality, per week, reached in succeeding years were :—

1897-98 ...	...	2,250	1904-05 ...	...	1,785
1898-99 ...	...	2,450	1905-06 ...	...	1,812
1899-1900 ...	...	2,820	1906-07 ...	...	2,180
1900-01 ...	...	2,620	1907-08 ...	...	1,340
1901-02 ...	...	2,594	1908-09 ...	...	1,250
1902-03 ...	...	1,902	1909-10 ...	...	1,152
1903-04 ...	...	2,604			

The usual season of maximum mortality is February or March. By degrees it came to be recognized that the continued existence of the plague, combined with the passive resistance of the people to measures which they

failed to approve, rendered drastic expedients both undesirable and inoperative. After the abolition of the first Plague Committee Government maintained for several years a specially organized plague administration in the city, charged with the carrying out of moderate measures of disinfection and isolation, as far as possible with the concurrence of the victims. Assistance was given for the evacuation of seriously infected localities by the erection of temporary health camps in various parts of the island.¹ Finally in 1901 the control of the plague operations was handed over to the Health Department of the Municipality, working under the orders of the Municipal Commissioner as Plague Commissioner, and with that department the control still (1910) rests.

How the disease was first introduced into the City is a problem still unsolved. It may have been brought by sea from Hongkong or from Southern China; it may have been conveyed from the Persian Gulf; or, as others suggest, the infection may have been carried from Kumaon and the Gharial Hills by pilgrims. Perhaps the most plausible theory is that plague was conveyed from the Persian Gulf and Arabia either by pilgrims who visit Bombay annually to the number of 20,000, or by rats or by merchandise. The two forms of the disease, the bubonic and pneumonic, differ in this respect that, whereas the former is but slightly contagious, the latter is one of the most virulent contagious maladies, the sputum of a patient attacked with pneumonic plague being full of plague bacilli. Leaving aside inoculation with Haffkine's serum, which is a precautionary measure of the highest importance at present but little understood by the mass of the people, the attention of the authorities is now directed towards undermining the disease by general measures of sanitation and conservancy, such as the structural alteration of insanitary houses, the speedy removal of material likely to harbour infection, the instruction of the masses in personal hygiene, the accurate registration of deaths and investigation into the origin of each case, the provision of adequate hospital accommodation, the evacuation of infected areas, the more constant cleansing of *gali*s, drains,

¹ Imperial Gazetteer of India.

and streets, and the poisoning of rats. The success of these measures cannot as yet be adequately estimated ; but it appears that both the general mortality and the plague mortality have somewhat declined since 1903, while there has been a marked improvement in the registration of births and deaths and the notification of infectious diseases. The percentage of deaths certified by medical practitioners in the city to the total mortality rose from 7 per cent. in 1903 to 21 per cent. in 1909, while the total number of cases of infectious diseases notified by medical men in 1909 was 19 per cent. of the total number of deaths as against about 2 per cent. in 1901. The chief difficulties experienced by the local authorities in combating the disease arise from the absence of any strong public opinion, the fatalistic tendencies of the Indian and the lack of appreciation of the value of life, popular ignorance of the elementary principles of sanitation, and from the opposition to remedial measures dictated by creed-prejudice. Nevertheless measures, such as the segregation of those attacked and the abandonment of infected areas, which were in the early days of the disease imposed upon the population by order and were consequently strongly resented, are now spontaneously resorted to by the people themselves, and there are grounds for hope that by dint of perseverance other measures of general sanitation will be gradually adopted.

The registration of vital statistics, which was performed by the Police from 1850 to 1867, has since the latter year been in charge of the Health Department of the Bombay Municipality.¹ A table showing the number of births registered in Bombay from 1867 to 1909 is given on the next page. The birth-rate per 1,000 of population since 1901 has been between 21 and 25 and rises higher than this (between 29 and 39) in the case of Musalmans, Jains, Bhattias, Parsis, Eurasians and Jews. The birth-rate per 1,000 of female population between 15 and 45 years of age was in 1909 143.5. Births are comparatively few, as many of the poorer people send their wives to their native villages for delivery.

Births and Deaths.

¹ See Report of Municipal Commissioner for 1867.

Year.	Males.	Females.	Total.	Ratio of births per 1,000 of population.	Year.	Males.	Females.	Total.	Ratio of births per 1,000 of population.
1867	2,671	2,444	5,115	6.52	1889	8,064	7,429	15,493	23.03
1868	1,938	1,606	3,544	4.52	1890	7,965	7,603	15,568	20.13
1869	1,912	1,576	3,488	4.44	1891	7,954	7,551	15,518	18.51
1870	1,735	1,405	3,140	4.00	1892	8,045	7,440	15,485	18.81
1871	2,992	2,745	5,737	7.31	1893	7,875	7,343	15,218	18.31
1872	6,894	6,241	13,135	20.38	1894	7,828	7,230	15,059	18.31
1873	6,655	6,067	12,722	19.74	1895	8,150	7,534	15,684	19.08
1874	6,608	6,227	12,835	19.91	1896	8,267	7,673	15,868	19.31
1875	6,894	6,497	13,391	20.78	1897	9,903	4,433	9,336	11.31
1876	7,020	6,603	13,625	21.14	1898	5,640	5,144	10,782	15.17
1877	7,195	6,622	13,817	21.41	1899	5,661	4,963	10,624	12.92
1878	7,339	6,699	14,038	21.78	1900	6,552	6,136	12,688	15.43
1879	7,736	6,823	14,559	22.59	1901	7,085	6,435	13,520	17.41
1880	9,388	7,859	17,247	26.76	1902	9,154	8,445	17,599	22.61
1881	8,675	7,903	16,638	21.51	1903	8,506	7,869	16,375	21.10
1882	7,945	7,421	15,366	19.87	1904	10,006	9,550	19,556	25.20
1883	7,902	7,280	15,182	19.63	1905	9,939	9,202	19,141	24.66
1884	7,634	7,003	14,637	18.93	1906	10,713	10,056	20,769	21.21
1885	7,762	7,202	14,964	19.35	1907	10,284	9,251	19,535	19.97
1886	7,772	7,137	14,909	19.28	1908	10,357	9,809	20,166	20.62
1887	7,992	7,437	15,429	19.95	1909	10,020	9,819	19,839	20.79
1888	8,669	8,091	16,760	21.67					

The following table shows the average number of births by caste during the quinquennial periods ending in 1901 and 1906 and the ratio of births per 1,000 of population :—

Caste or Race.	Population in 1901.	Average number of births for 5 years ending 1901.	Average number of births for five years ending 1906.	Ratio per 1,000 of population for 5 years	
				Ending 1901.	Ending 1906.
Jains	14,248	233	516	16.3	36.2
Brahmins	31,078	239	420	7.7	13.5
Lingayats	2,144	9	36	4.2	10.7
Bhattias	5,359	69	150	12.8	20.6
Hindus (other)	395,501	5,275	8,776	13.3	22.1
Hindus (low caste)	73,617	1,571	2,701	21.3	35.6
Muslims	155,121	2,162	3,791	13.9	24.4
Parsis	46,231	1,045	1,245	22.6	27.1
Jews	5,357	122	186	22.7	31.7
Native Christians	29,045	414	576	13.9	19.4
Eurasians	3,259	86	92	26.4	38.1
Europeans	12,273	158	170	12.8	14.5
Negro Africans	626	3	6	4.7	9.5
Buddhists	395	2	4	5.0	10.1
Other and unknown	153	3	8	19.6	52.3
Total	776,006	11,391	18,655	14.6	24.0

The number of deaths from various causes from 1848 to 1909 is given in Appendix I at the end of the chapter. During the opening years of the 19th century, the annual mortality was between 4,000 and 6,000, which was augmented on occasions, such as the famine of 1804 and the cholera epidemic of 1818 and 1819, to a much higher figure. Captain Hall, writing in 1832, remarked that "in ordinary seasons the deaths in Bombay may be taken at 17 daily, making the annual mortality about 6,205";¹ but the gradual growth of the city and the annual epidemics of plague during recent years have raised the annual mortality to an alarming figure. The figure of 79,350, recorded against the year 1900, was largely due to the presence of cholera, small-pox and fever, which attacked the large swarms of famine-stricken immigrants with great severity.

The mortality is highest in Tarwadi, Second Nagpada, Kamathipura, Umarkhadi, Khara Talao, Byculla and Dongri, where it averages from 60 and 80 per cent. of population. In some of these areas the density of population is excessive, and the inhabitants suffer from the impurity of the soil and air, which is more pronounced here than in other more open and less water-logged areas. Speaking generally it may be laid down that abnormal seasons of heat or rainfall are followed by a rise in the general death-rate of the city, while the infant mortality is largely augmented by absence of proper nourishment, insanitary conditions of living and by the semi-religious and semi-social prejudices and practices of the bulk of the population. Hard labour of a kind unsuited to womanhood exercises considerable influence over the death-rate among females of the poorer classes, while the seclusion enforced among the women of certain sections is a decided factor in the spread of such diseases as phthisis, which flourish in the ill-ventilated and dirtier quarters of the city.² Of the total number of deaths the largest number is of infants under one year and averages from 20 to 24 per cent. of the total mortality. The mor-

¹ Fragments of Voyages and Travels, p. 75.

² See the Annual Reports of the Municipal Commissioner for further details.

tality among children between one and five years averages about 10 per cent. of the total mortality.

Infirmities. The details of infirmities according to the Census of 1901 are as under :—

	Insane.	Deaf and Mute.	Blind.	Leper.	Total.
Males	270	129	279	269	917
Females	109	61	205	121	496
Total	379	190	484	3	1413

In 1901 there were about 270 insane in the Lunatic Asylum ; 350 lepers were in the Lepers' Home, Matunga, and the Schools for Blind and Deaf and Mute were attended by about 100 persons. No prosecutions have been made under the Leprosy Act, but all possible precautions are taken to segregate them. The Matunga Asylum is hardly large enough to accommodate all the lepers that from time to time wander about the city. In 1831 a society was organized to afford relief to the blind and lame, but it was abolished in 1846 for want of funds. There are a certain number of charitable houses in which infirm beggars receive aid. The blind wander from street to street begging, and are seen near the temples in large numbers on public holidays.

Medical Institutions.
Early history.

As early as 1668 the unhealthiness of the climate impressed upon the East India Company's servants in Bombay the prime need of a hospital. The Commissioners, writing to Surat in October of that year, stated that many of the soldiers were ill, and that medicines were urgently needed, "especially marmalade of Bussora for the flux, the epidemic disease of this place" ¹; while three years later the Bombay Council referred to their "having had a very sickly time and having buried several persons" ². But, notwithstanding the high mortality, no definite steps towards establishing a proper "hospital for sick English," were taken until Gerald Aungier had assumed the reins

¹ Commissioners to Surat, October 8th, 1668.

² Bombay Council to Surat, November 18th, 1671.

of Government ;¹ and it was really due to his forcible representations that in 1675 the Court of Directors formally sanctioned the erection of a hospital, agreeing at the same time to allocate towards the cost of building "two-thirds of the fines and penalties received for the use of the alms-houses at Poplar."² The Bombay authorities thereupon set about finding a suitable site, and informed the Directors that they estimated the cost of a building, capable of accommodating fifty or sixty patients, at £160 ;³ the Council at Surat had a plan drawn up and sent orders down to Bombay that the annual cost of maintenance was not to exceed Rs. 1,000 ;⁴ and in 1676 the Court of Directors despatched Dr. Wilson from England as first Physician, in the hope that he would prove "a great benefit and happiness to the Island." It appears, however, that the proposed building was never erected, and that instead a new Court of Judicature was built in the bazaar, while the old Court situated on the Esplanade to the south-east of the present Cooperage was transformed into a hospital in 1677.⁵

This hospital, the first ever known in Bombay, was in use until some little time prior to the year 1733, when a new building was erected near the Marine yard, nearly opposite the present Great Western Hotel.⁶ The cost of completing it was defrayed by the imposition of a half per cent. duty on trade. From 1740 onwards it was inspected weekly by a Board composed of the Land Paymaster, the Marine Paymaster and the Commandant of the Station, and seems to have been the chief resort for sick persons in

¹ Aungier to the Directors, January 15th, 1674. See footnote on page 595 of the *Bombay Gazetteer Materials*, Part III. It appears that some sort of hospital existed prior to 1675. See also *Times of India*, October 27th, 1893.

² Court to Surat, March 5th, 1675.

³ Bombay to Court, Nov. 26th, 1675.

⁴ *Bombay Town and Island Materials*, III. 543 and 595 *et seq.*

⁵ Selection from Letters and Despatches, I. 106, 120. A letter of 22nd January, 1677, from Surat to Court, mentioned that "Mr. Gyfford's house by the water-side had been taken by the Company as a warehouse and hospital." This may have been the original court house, vacated on the completion of Mapla Por in 1677.

⁶ See Grose's plan of Bombay facing page 32 of Vol. I of this work.

both military and civil employ until the beginning of the nineteenth century, when the pressing need of more space in the Marine yard for the accommodation of workmen and materials forced Government to consider the desirability of choosing a new site. As early as 1781 they had called for plans and estimates for a hospital to be built at Mody Bay "behind the present old revetment laying between the two-gun battery and the cremaillere work";¹ but the fact that a map of the great fire of 1803 shows the General Hospital in its old place, hampering the Marine yard, is conclusive evidence that no definite action was taken for many years. In addition to this general hospital in the Fort, there were at the close of the eighteenth century a hospital for native troops on the Esplanade and a convalescent home on Old Woman's Island (Colaba).²

The year 1824 witnessed the final relinquishment of the Marine yard hospital in favour of a new building erected in Hornby road for the use both of the garrison and the European civil population.³ The site had been occupied

¹ *Bombay Gazetteer Materials*, III, 596-8. Note that Edward Ives, writing of Bombay in 1754 remarks:—"Our hospital at Bombay was without the town-wall; and in order to make my attendance on it the more convenient, Mr. Delaguarde, a factor in the Company's service, was so obliging as to give me the use of a very commodious house which lay near the hospital and belonged to him as Superintendent of the Powder Works". This may have been the old hospital.

From *Valentia's Travels* it appears that there were hospitals in Bombay in 1809 "opened for the gradual administering of relief to such as were too much exhausted to feed themselves."

² *Forbes' Oriental Memoirs*. The hospital on Old Woman's Island was known in 1758 as the King's (Seamen's) Hospital, and was appropriated ten years later as a convalescent home. The sepey hospital was opened in 1769. There was also an Artillery hospital at the Matunga Cantonment during the early years of the nineteenth century. *Stocqueller* (1819) describes it as well-tenanted. "Newly arrived Assistant Surgeons had a fine field for the study of the disorders peculiar to India in the persons of the wretched occupants of the planks and trestles which formed the bedsteads. An easy-going old gentleman was the full Surgeon of the batteries; who usually went his rounds, accompanied by a Dresser, and some youths, and who had a summary method of disposing of his patients. 'Give him two pills' was the invariable remedy." (*Times of India*, 10th July, 1872).

³ *Times of India*, Oct. 27th, 1893. Mr. D. E. Wacha writes: "As a boy I knew a congeries of thatched buildings in Hornby Road with a compound, which was known as the hospital. A portion of the compound, with the gates, may be still seen where the

by a gun carriage factory, which was removed to Colaba about 1820. This hospital continued to be used until 1860, when the medical authorities condemned it, and Government determined to sell it with the land on which it stood, and devote the sale-proceeds to the erection of a new hospital on the Cooperage. Meanwhile, it was decided to use the European Artillery barracks in Fort George as a temporary hospital, and they were vacated by the troops in 1861; the hospital in Hornby road was sold in 1862 for 3 lakhs, and in December of the same year the Executive Committee for the removal of the ramparts was directed to find a suitable site near the Cooperage for the new building. Plans for a building, costing 5 lakhs, including surgeons' residences, costing 1 lakh, formed the subject of a competition¹ and the laying of the foundations on the Esplanade parade ground was actually proceeded with until the Sanitary Commissioner put a stop to the work on sanitary grounds.² In consequence, interest in the matter languished until 1876, when the temporary huts in Fort George were relinquished in favour of a building known as the Officers' Quarters which had previously been used partly as the residence of the House Surgeon and partly as a convalescent and contagious ward, and no definite step towards the construction of a proper hospital was taken until 1886, when, on the initiative of Lord Reay and Sir M. Melvill, plans were prepared and culminated in the laying of the foundation-stone of the present St. George's Hospital in 1889.

Sir Jamsetji Jijibhoy Parsi Benevolent school stands. The principal portion of the hospital and its compound is now represented by the premises of Bhesania, the Silk-Merchant."

¹ Times of India, Jan. 2, 1865. The Committee awarded the palm to the design of Captain Wilkins, but stated that none of the designs complied fully with the conditions specified, particularly in the matter of cost. The Bombay Government replied that they did not wish to withhold the premia; whereupon the Committee, contrary to all practice, melted the two prizes of Rs. 2,500 and Rs. 1,000 in one crucible, and divided the contents among seven competitors.

² The Government of India also did not approve of the plan of the building. The foundations, which cost nearly a lakh, now lie buried under the ground in front of the Bombay Gymkhana.

Apparently little was done towards providing State aid to the native population prior to the opening of the nineteenth century. Captain Hall, who visited Bombay shortly after the great famine of 1802-04, records that "several great sheds were erected as hospitals on the smooth greensward lying just beyond the foot of the glacis and reaching nearly across the Esplanade in front of the northern line of the fortifications. Numerous surgeons, some military and some belonging to the civil establishment, were called in from various out-stations and placed in charge of these and other infirmaries."¹ About 1809 a kind of Native General Hospital was in existence, which treated daily about 20 patients and was supported solely by Government. The inmates were chiefly paupers sent in by the police. In 1834, in pursuance of resolutions adopted at a public meeting, the Bombay Native Dispensary was opened in buildings granted rent-free by Government; ² and a few private dispensaries, notably one opened in Girgaum road in 1846, commenced to afford medical aid to the native population. The popularising of medical institutions and European remedies was largely the work of the Committee of the Native Dispensary, formed in 1836. By 1866 Bombay contained the Jamsetji Jijibhoy Hospital, including an Obstetric Hospital, and an Eye Dispensary, which was closed on the completion of the Sir Cowasji Jehangir Ophthalmic Hospital in that year, a Police Hospital, the Byculla Schools Hospital, and the Royal Indian Marine Dockyard Dispensary: while in 1874 the Jehangir Nasarwanji Wadia Dispensary at Mahim, opened several years before, was formally recognised by Government for a grant-in-aid, and the Gokuldas Tejpal Native General Hospital was opened for the benefit of native patients resident in areas distant from the J. J. Hospital. About this date the Native Dispensary opened a branch at Colaba, which was

¹ Fragments of Voyages (1832), 64.

² Times of India, July 13, 1842. The dispensary was established by Drs. Makie and Bremner, and was maintained by public subscription and a monthly donation from Government of Rs. 300.

shortly afterwards abolished. This indirectly led to the opening of a branch in Khetwadi in 1877, which subsequently became the Nasarwanji Petit Charitable Dispensary. This was followed a decade later by a movement to afford medical relief to native women, who are, as a rule, averse to treatment by male doctors, and in 1885 the Bombay Committee of the Medical Fund for the Women of India opened a temporary hospital for in-door patients at Khetwadi, the out-door patients being treated at the Jasaf Suleman Dispensary for women and children, which was opened near the Crawford Market in the next year.¹ In the following year (1886) the Pestanji Hormasji Cama Hospital was opened, whereupon the Khetwadi hospital was closed, and its inmates were removed to the former institution. The year 1890 witnessed the opening of the Bomanji Edalji Albless Obstetric Hospital, which stands in the compound of the Cama Hospital, and is under the same executive staff. In 1890 the Aeworth Leper Asylum at Matunga was opened, and in 1892 the Obstetric wards of the Jamsetji Jijibhoy Hospital were replaced by the Bai Motlibai Wadia Hospital and the Sir Dinsa Maneekji Petit Hospital, and an out-door department for both these hospitals was provided by the Dwarkadas Lallubhai Dispensary for women and children. Full statistics of the number of private practitioners, who mostly own dispensaries, are not available ; but, according to the census of 1901, Bombay contained 282 chemists and druggists, 555 diplomaed medical practitioners, 393 medical practitioners without diplomas, 106 midwives and a considerable number of nurses.

The following table shows the growth of medical institutions in Bombay city and island, and details of their work, and expenditure at different periods since 1880 :—

¹ The Jasaf Suleman Dispensary was opened by Lady Reay on the 29th March 1886.

		1880	1890.	1900.	1908.
Number of Institutions	Civil Hospitals	5	6	9	9
	Dispensaries	1	2	5	20
	Total	6	8	14	29 ³
Number of patients treated	In-door ..	9,522	12,555	18,187	18,966
	Out-door ..	61,280	84,142	101,518	162,410
	Total	70,802	96,697	119,905	181,516
Daily average strength.	In-door ..	596'6	602'6	1,127'1	1,119
	Out-door ..	563'3	789'3	851'8	975
	Total	1,179'0	1,391'9	2,978'9	2,114
Number of Beds available	..	764	817	1,315	1,831
Number of Surgical Operations	..	9,312	11,976	10,079	10,603
Expenditure .. .. ..	..	2,71,750	3,37,896	4,24,387	7,44,778
Cost per Patient .. .. ..	..	Rs. 3-13-5	Rs. 3-7-11	Rs. 3-8-8	Rs. 4-1-9
Average cost of each Diet ..	..	Re. 0-5-3	Re. 0-5-3	Re. 0-5-3	Re. 0-6-1
Percentage of Cost paid by Government .. .. ..	..	85-8	81-5	69-8	61-9

* Excluding 23 State-spesial, Private and Military Hospital's and Dispensaries.

The Saint George's Hospital.¹

The foundation stone of the St. George's, or the European General Hospital, was laid by Lord Reay on the 22nd February, 1889; and the building was completed according to the design of Mr. J. Adams in December 1892, at a total cost of 6 lakhs. It accommodates 130 patients, including the inmates of five special wards. Additions have recently been made which include a new hospital for women, adjoining the north end of the men's hospital, and accommodating 97 patients, an obstetric ward, a children's ward and seven special wards. This building, which takes the place of the old hospital in the artillery barracks, was completed in 1907 at a cost of Rs. 4,34,801, and forms, together with the men's hospital, a very imposing structure. In the compound of the hospital are special smallpox wards, accommodating 16 patients and built in 1905 and wards for measles, which consist of two temporary structures erected in 1906, for the accommodation of ten patients, while European plague patients are treated temporarily (1909) at the Maratha Plague Hospital. The staff of the hospital comprises

¹ For early history see general history of hospitals, *supra*, Bombay Gazetteer, Vol. XXVI, III, and Times of India of 4th June and 17th December, 1892, and 27th October, 1893.

a Physician in charge and a Resident Surgeon, both of the Indian Medical Service, and four Military Assistant Surgeons, who are resident on the premises ; while the nursing staff is composed of a Lady Superintendent with one assistant, 8 charge sisters, 34 nurses, 7 probationers, and a house-keeper with an assistant.

Trained European nurses were first employed to the number of three in 1876, their number being increased to six between that date and 1885 ; and in the latter year the entire nursing-work was taken over by the All Saints' Sisters, who received from Government in return a monthly grant of Rs. 340. This system continued until 1902, during which period the Sisters brought the nursing to a high state of efficiency, and trained a very considerable number of candidates for this duty. To assist the Sisters in their self-imposed task, a Nursing Fund was opened in 1889, the committee of which formed itself into the St. George's Hospital Nursing Association,¹ when the Sisters resigned their duties in 1902. The committee of the Nursing Association consists of 12 members, of whom 3 are appointed by Government. Visiting committees report every month to the Main Committee, which also appoints a Ladies' Visiting Committee to visit the female wards. The Nursing Association now provides the whole of the present nursing-staff numbering 49 and costing annually Rs. 47,000, of which Rs. 23,500 are provided by Government and the balance by the Port Trust and public subscriptions. Since 1886 an additional staff of private nurses has also been maintained. These, who number (1909) sixteen, attend patients in all parts of the Bombay Presidency and occasionally visit other Provinces. Both the hospital and private nursing staffs are housed in three blocks of buildings facing the new women's hospital, two of which were built by Government at a cost of more than one lakh and the third was built by the Nursing Association at a cost of Rs. 45,000. Prior to 1894 the whole nursing staff was very poorly accommodated on the ground floor of the old women's hospital. The Association has also built and endowed a cottage at Nasik at a cost of Rs. 5,000 for the use of nurses on leave during the monsoon.

¹ The Association is registered under Act XXI of 1860.

The following table shows the work, income, and expenditure of the Hospital at different periods since 1880:—

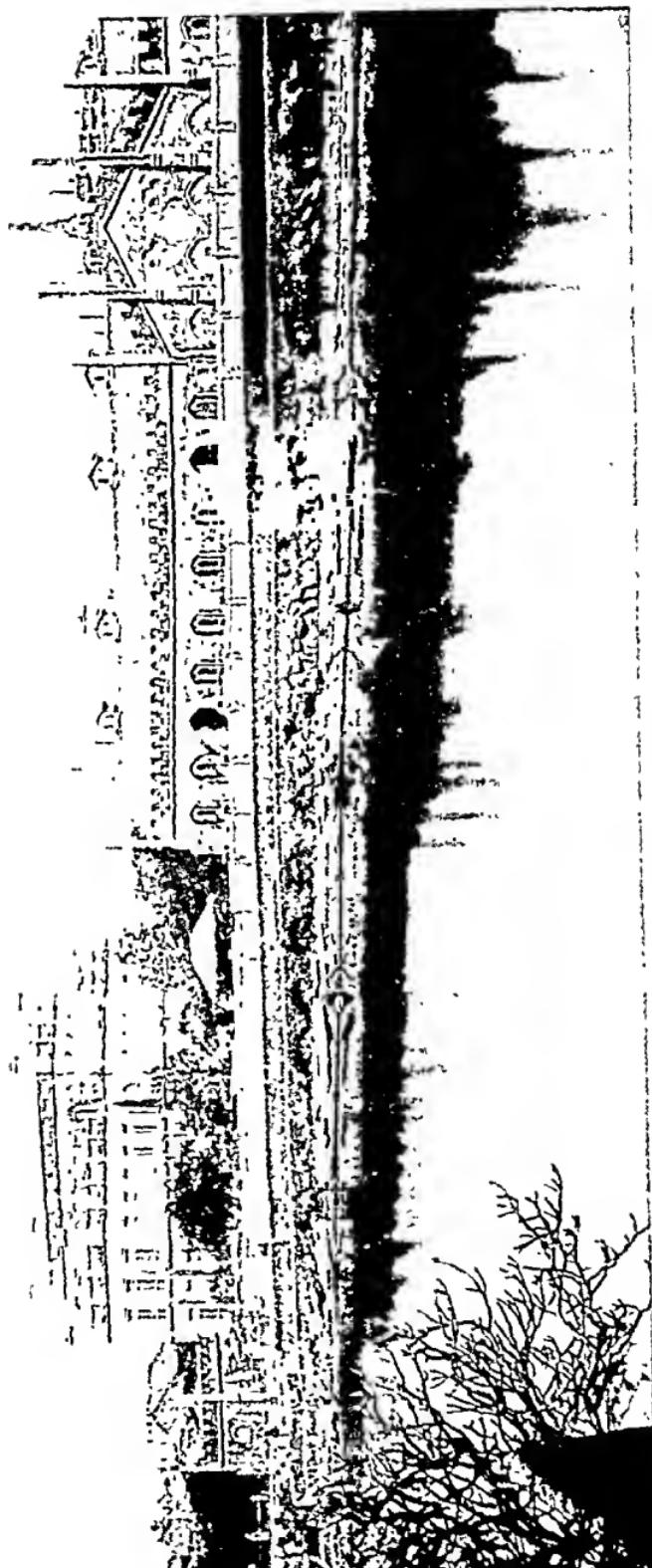
	1880.	1890.	1900.	1903.
Number of patients treated.				
In-door.	1,304	1,233	2,613	2,564
Out-door	1,395	1,776	2,799	1,359
Total ...	2,699	3,009	5,412	4,923
Number of beds available ...	130	136	208	227
Number of surgical operations ...	873	528	1,167	411
Expenditure Rs. 65,273	72,473	1,22,165	2,5,010	
Percentage of cost paid by Government	82.7	61.2	54.5	93.9

Owing to the noise of the G. I. P. Railway Terminus and of the new Docks, both of which are close to the Hospital, it is under contemplation to transfer the Hospital to a new site.

The Jamsetji Jijibhoy Hospital.

The foundation-stone of the Jamsetji Jijibhoy Hospital on the Parel road, Byculla, was laid on the 3rd January 1843 by Dr. James Burns in the presence of the Governor of Bombay, Sir George Arthur, and the building, which was erected at the joint expense of the East India Company and Sir Jamsetji Jijibhoy, the first Baronet¹ was formally opened in May 1845. Designed to afford medical relief to the native poor of all classes, the main building consists of 18 wards, containing 237 beds, of which 58 are set apart for female patients, while a detached building, containing 34 beds, is set apart exclusively for Parsi male patients, and a second separate building with 25 beds is allocated to chronic or incurable cases. The medical staff comprises a Senior Medical Officer, who like other medical officers at Government institutions, is under the control of the Surgeon-General with the Government of Bombay, a Senior Surgeon, a first and a second Physician, and a second Surgeon, a House Surgeon of the Military Assistant Surgeon class, three other Military Assistant Surgeons and six Honorary Medical Officers, including an Honorary Physician in Skin Diseases and an Honorary

¹ Sir Jamsetji Jijibhoy's contribution was Rs. 1,61,000.



BABULA TANK. 1864.

(Showing the J. J. Hospital before the Tank was filled.)

Surgeon in Dentistry. The Nursing Association provides a considerable staff of hospital and private nurses. On the 25th September, 1906, Lord Lamington laid the foundation stone of the Sir William Moore Operation Theatre, which cost about Rs. 61,500. Out of this sum Lady Moore contributed Rs. 33,528.

The following table shows the work, income and expenditure of the Jamsetji Jijibhoy Hospital at different periods since 1880 :—

	1880.	1890.	1900.	1908.
Number of Patients In-door, treated.	4,659	7,095	6,173	5,390
Out-door	29,344	43,553	33,937	22,259
Total ...	34,003	50,648	40,112	27,649
Number of Beds available ..	440	440	352	296
Number of Surgical Operations	5,287	6,357	4,548	2,854
Expenditure ... Rs.	1,50,490	1,59,220	1,06,525	1,29,307
Percentage of cost paid by Government	99·7	99·9	94·5	66·3

The Sir Cowasji Jehangir Ophthalmic Hospital adjoins the Jamsetji Jijibhoy Hospital and was built in 1866¹ at a cost of nearly one lakh, given by the late Sir Cowasji Jehangir Readymoney. It originally contained accommodation for 28 male and 12 female in-patients, many of whom came from outstations. Lack of accommodation led to the construction of a new building, costing Rs. 60,000 of which Sir Cowasji Jehangir has subscribed half. The new building contains an out-patient department, a major operating-room, a nurses' room, surgeon's office, and full accommodation for 30 more patients, and also affords better facilities for the practical instruction of students of the Grant Medical College. Though the work in this hospital is of a more varied nature than in other parts of India, the bulk of the in-patients are persons requiring operations for cataract. An Ophthalmic Surgeon, who is an officer of the Indian Medical Service, is attached to the Hospital.

The Sir
Cowasji Je
hangir Oph-
thalmic Hospi-
tal.

The following table shows the work, income and expenditure of the Cowasji Jehangir Ophthalmic Hospital

¹ It was opened for patients on July 21st, 1866.

at different periods since 1870 :—

	1870.	1880.	1890.	1891.	1892.
Number of patients treated.	In-door..	543	484	566	512
	Out-door	5,699	8,833	13,012	13,477
Total ...	...	6,183	9,337	13,578	13,989
Number of beds available.	40	40	35	42	42
No. of Surgical operations	600	1,105	2,539	4,353	4,777
Expenditure Rs.	...	3,448	4,767	5,014	5,333
Percentage of cost paid by Government ...	...	100·0	100·0	95·5	95·5

The Bai Motlibai Obstetric Hospital.

To the east of the Jansetji Jijibhoy Hospital on Babula Tank road lie the Bai Motlibai Obstetric Hospital, the Sir Dinshaw Maneckji Petit Hospital for women and children, and the Dwarkadas Lallubhai Dispensary, which jointly provide accommodation for 60 women and 20 children, and are utilized as institutions for the training in midwifery and gynaecology of the students of the Grant Medical College. The Bai Motlibai Hospital, which annually admits more than 800 cases was built by Mr. Motlibai whose name it bears at a cost of Rs. 1,52,061 ; the foundation stone was laid by Lord Reay in March, 1842 ; the completed building, as designed by Mr. John Addeo, was opened by Lord Harris in March, 1892. Sir Dinshaw Maneckji Petit built the second hospital, which annually admits more than 600 cases, for Rs. 1,19,351 ; Lord Reay laid the foundation stone in January, 1892, and Lord Harris formally opened the building in March, 1892. The architect of the former hospital also designed this building. Lord Harris likewise opened on the same date the Dwarkadas Lallubhai Dispensary for women and children, which cost nearly Rs. 10,000, and annually treats about 9,000 patients. The staff of the three institutions comprises a Physician of the Indian Medical Service in charge, a House Surgeon of the Military Assistant Surgeon class, and two honorary obstetric physicians.

The following table shows details of the work, income, and expenditure of the Bai Motlibai Wadia and Sir Dinshaw Maneckji Petit Hospitals and the Dwarkadas Lallubhai Dispensary.

bhai Dispensary at different periods since 1892 :—

	1892.	1900.	1908
Number of Patients | In-door ... | Out-door ...	686 5,703	1,445 10,224	1,848 8,171
Total ...	6,389	11,669	10,010
Number of Beds available ...	80	80	80
Number of Surgical Operations.	54	224	273
Expenditure Rs.	29,661	31,523	33,458
Percentage of cost paid by Government	100%	99·9	99·4

The Pestanji Hormasji Cama Hospital for women and children, with which are connected the Bomanji Edalji Albless Obstetric Hospital and the Jafar Suleman Dispensary, originated in a movement commenced in 1882 by Mr. G. Kittredge, Mr. Sorabji Shapurji Bengali and others, to afford medical assistance to Indian women. In the following year Mr. Pestanji Hormasji Cama offered one lakh of rupees, which he eventually increased to Rs. 1,64,300 for the erection of a hospital for women and children to be under the sole charge of medical women;¹ and although the medical officers of the Jamsetji Jijibhoy Hospital endeavoured to obtain Mr. Cama's donation for an addition to that hospital, which was lamentably deficient in accommodation for female patients, yet the wishes of Mr. S. S. Bengali and others were acceded to by Government, and a suitable site on the Esplanade was granted for the building now known as the Cama Hospital. The foundation-stone of the building was laid by H. R. H. the Duke of Connaught on the 23rd November, 1883: and in the following month Dr. Edith Pechey arrived from England as First Physician, and carried on her work in a small bungalow at Khetwadi until the hospital was opened for occupation in August 1886. Meanwhile, Mr. Cumoo Jafar Suleman had given Rs. 20,000 for the erection of a dispensary for women and children, which was opened in 1886, on a site adjoining the Crawford Markets, as part of the Cama Hospital; and in 1890 a further addition

The Cama Hospital.

¹ The total cost of the building was actually Rs. 1,71,722. It was designed by Khan Bahadur M. C. Murzban.

was made in the form of the Bomanji Edalji Albless Obstetric Hospital, which cost Rs. 59,640, and was designed for the special accommodation of obstetric cases. The three buildings form practically one institution, financed and controlled by Government and the medical staff comprises a First Physician, who is appointed by the Secretary of State, a Second Physician and a senior and a junior House Surgeon, who are appointed locally and reside on the premises. An adequate staff of nurses, whose salaries are paid by Government, is maintained and the Countess of Dufferin Fund also supports, as an adjunct of the hospital, a training-school for nurses and midwives, which was opened in 1887. The nurses, who obtained certificates from this school up to the end of 1909, numbered 225 and belong to the European, Jew, Brahman and other Hindu and the Muhammadan communities. In many cases they are sent to Bombay as students by up-country municipalities and by the authorities of Native States, and subsequently return to practice in those areas. The nurses' quarters, which were originally constructed out of donations from the Countess of Dufferin Fund and from Mr. Cama, have been recently enlarged at the joint expense of Government and the fund; and in 1909 a private institute for nurses was opened to meet the demand for Indian Nurses for Indian families.

The following table shows the work, income and expenditure of the Cama and the Albless Hospitals, and the Jasar Suleman Dispensary at different periods since 1885 :—

	1886.	1890.	1891.	1908.
	P. H. Cama Hospital and J. S. Dispensary.		Cama and Albless Hospitals and J. S. Dispensary.	
Number of patients { Out-door	334	808	1,076	2,026
.. In-door	2,707	8,207	8,761	8,173
Total	3,041	9,015	9,837	10,199
Number of Beds available	60	60	100	100
Number of Surgical Operations	21	62	288	585
Expenditure Rs. ..	12,095	38,197	40,445	63,910
Percentage of total cost paid by Govt.	100·0	98·7	91·3	89·5

Up till 1904 the hospital for the Bombay City Police force was located in an old workshop at Mazagon and accommodated only 35 in-door patients.¹ Under the auspices of Lord Northcote, the new hospital, which stands in close proximity to the Grant Medical College at the junction of Parel road and one of the new roads made by the Improvement Trust, was commenced, and was finally opened by Lord Lamington in August, 1904. It can accommodate ninety-four patients at present; and it is the intention of Government to add a lunacy ward to the building, in which vagrants and all persons, whose mental condition the Presidency Magistrates desire to ascertain can be kept under observation. The hospital is in charge of the Police Surgeon.

The Northcote Police Hospital.

The following table shows details of the work, income and expenditure of the old and new Police Hospitals, Bombay, at different periods since 1891 :—

	1891.	1900.	1908.
Number of patients In-door ... Out-door ...	2,291 39	2,077 57	2,721 141
Total ...	2,330	2,134	2,862
Number of beds available ...	35	35	94
Number of Surgical Operations..	1	56	79
Expenditure ... Rs. ...	6,782	6,957	15,423
Percentage of the total cost Paid by Government	100·0	100·0	100·0

The Gokuldas Tejpal Native General Hospital owes its origin to an outcry raised in 1865 for a second hospital for natives of India; and the late Mr. Rustomji Jamsetji Jijibhoy offered to provide Rs. 1,50,000 that year, if

The Gokuldas Tejpal Hospital.

¹ Up to 1866 sick policemen were sent to the J. J. Hospital. In that year the stable of the old Hamilton Hotel was assigned as a separate Police Hospital and did duty till 1870 when the Municipality temporarily placed a workshop at the disposal of the police. The building however was very unsuitable and the source of great complaint. It was eventually supplanted by the Northcote Police Hospital.

Government would grant Rs. 1,00,000 and a site, and if the Municipal Corporation would support the hospital. The financial crisis, following upon the share mania, subsequently prevented Mr. Rustomji from carrying out his intentions, and the scheme was held in abeyance until 1859, when Mr. Crawford, the Municipal Commissioner, induced Mr. Gokuldas Tejpal to provide 12 lakhs towards the cost of the building. Government and the Municipal Corporation thereupon expressed themselves willing to abide by the previous arrangement; the building was designed by Colonel Fuller, R.E., and commenced in May 1870, and was finally completed at a cost of about 37 lakhs on the 8th April, 1874.¹ The site was granted by Government. The Hospital accommodates about 120 patients. The medical staff consists of a Medical Officer of the Indian Medical Service, a House Surgeon of the Military Assistant Surgeon class and four Civil Medical Assistants.

The following table shows details of the work, income and expenditure of the Gokuldas Tejpal Native General Hospital at different periods since 1874:—

	1874-75	1880	1885	1890	1895
No. of cases treated:					
Inpatients	7,011	2,551	1,615	2,829	2,731
Outpatients	6,281	17,532	14,073	13,161	9,860
Total	13,292	19,983	15,688	16,990	12,591
Number of beds available	122	122	112	122	122
Number of surgical operations	133	1,845	2,377	3,277	810
Expenditure	Rs. 75,015	35,470	46,010	53,195	61,317
Percentage of the total cost paid by Government	50%	49%	49%	50%	50%

The Colaba Lunatic Asylum.

The Colaba Lunatic Asylum was established in 1826 and was originally designed for the accommodation of 70 inmates. About the year 1850 the number of patients began to increase rapidly, and a new bungalow was therefore constructed for the use of the Superintendent, his old quarters in the asylum being altered

¹ For detailed account of the building see the Annual Report of Civil hospitals and dispensaries, 1874-75.

for the use of patients. Twelve years later (1872) further accommodation was found necessary, and two new blocks were erected, one for European male patients and the other for females. The older portion of the asylum consists of a centre block with two wings, forming three sides of a square, a kitchen, and a library; and, coupled with the later buildings above mentioned, has accommodation for 258 patients. In 1902 all the native patients were removed to the Narottamdas Madhavdas Asylum at Naupada, near Thana, and since that date only Europeans, Eurasians (who have adopted European habits), Parsis and Jews have been admitted to Colaba.

The asylum is situated on the western side of Colaba Point, and covers an area of between four and five acres. It stands upon trappéan rock of the green stone variety, cropping up above the surface of the soil, which is composed of red earth and a loose calcareous sand containing decayed marine deposits. As early as 1850, it was recognized that the Asylum was, in point of situation and accommodation, far from satisfactory; and in view of its obvious disadvantages, Government have recently decided to erect a new Central Asylum at Yeraoda near Poona, to which, when completed, the inmates of the Colaba Asylum will be transferred.

The following table gives details of the number of patients and of the expenditure of the Asylum from 1870 onwards:—

Year.	Number of Insane.		Daily average number of Insane.		Expendi- ture.
	Crimi- nal.	Non-cri- minal.	Crimi- nal.	Non-cri- minal.	
1870	29	335	25	209	...
1880	62	405	51	245	63,413
1890	68	388	48	225	69,225
1900	45	451	32	263	75,270
1905	11	219	7	133	50,759
1908	12	217	10	145	67,227

During the year 1908, 31 European and 41 native patients were admitted to the asylum. Of these 24

were suffering from melancholia, 23 from mania, 9 from dementia, 11 from delusional insanity, 5 from idiocy and 2 from general paralysis of the insane. In most cases the primary causes of mental complaints are the use of intoxicating drugs and over indulgence in spirituous liquor, epilepsy, sunstroke, self-abuse, fever and congenital diseases. The asylum is in charge of a medical officer of the Indian Medical Service as Superintendent and a Military Assistant is in sub-charge.

The Acworth Leper Asylum.

The first step towards the foundation of a leper asylum in Bombay was taken by the Roman Catholic Bishop of Bombay in 1853, who requested Government to place at his disposal for five years one of the old forts at Sion, Matunga, Sewri or Vartli, together with a certain area of culturable land in the vicinity, with a view to converting it into the head-quarters of a leper colony. The request could not, for various reasons, be granted, and large numbers of lepers therefore continued as before to collect and ask alms in the crowded portions of the city. One band in particular settled in 1859 around the Nakhoda tank on the Esplanade, between St. Xavier's College and the Elphinstone High School, and were with difficulty dislodged; and this circumstance, in combination with the pressure of public opinion, induced Government in 1860 to issue a notification declaring "black leprosy" an infectious disease, dangerous to life, and ordering that all lepers should be sent to the Edalji Framji Albless Leper Home on Trombay island or to the Dinshaw Maneckji Petit Leper Hospital in Ratnagiri. As however the Trombay Asylum had very limited accommodation and the Ratnagiri Asylum was so far off, considerable difficulty was experienced in carrying out these orders. About this date Sir Dinshaw Maneckji Petit offered Government one lakh of rupees for the erection on Trombay island of a new asylum, the foundation-stone of which was laid by H. R. H. the late Prince Albert Victor of Wales on the 25th March 1890. Meanwhile public opinion had once again been aroused by a letter from Lady Thompson in the "Times of India," and the Municipal Commissioner, Mr. H. A. Acworth, I.C.S., determined to make some provision for the housing of lepers, pending the

completion of a proposed leper home on Trombay island. Under his auspices a public subscription was set on foot, which by May 1892, amounted to nearly one lakh, among the largest subscribers being H. H. the Gaekwar of Baroda, H. H. the Thakore Saheb of Bhavnagar, H. H. the Rao of Cutch, and H. H. the Aga Khan. As a site for the asylum, Mr. Acworth chose a plot of municipal ground, which had once contained military barracks ; several of the old plinths still existed and were capable of adaptation to the new structures. The ground lies on the east of the Matunga road, about two miles north of Government House, Parel, and one-and-a-half miles from Dadar station. Completely hidden by trees from the road, it is bounded on the west and south by stretches of rice-land, leading to the salt-works, and beyond them by the harbour ; while an ample supply of water is obtainable from the Vehar main, which runs along the Matunga road. The work of construction commenced in August 1890, under the orders of Mr. Rienzi Walton, Executive Engineer to the Municipality, and the chief buildings, together with comprehensive drainage arrangements, were completed in June 1891, at a cost of Rs. 63,000. By 1897 the asylum was capable of accommodating 300 lepers ; in 1900 an additional area was enclosed, on which were built two new wards with accommodation for 50 more patients ; while in 1904 Mr. Janardhan Gopal Mantri erected, at his own cost, three small cottages for the use of lepers belonging to the better classes. At present (1909) the asylum can accommodate 350 persons, and is in charge of a medical officer appointed by the Municipal Corporation, aided by a house surgeon and a leper school master. The average annual income of the asylum is about Rs. 48,000 while the average annual expenditure amounts to Rs. 46,000. The inmates of the asylum are thoroughly contented, and have no desire to stray away from their very comfortable quarters ; and the degree to which their convenience has been studied is proved by the existence of a Roman Catholic church, a Hindu temple, and a Muhammadan mosque, which were erected by public subscription within the grounds between 1891 and 1893. In 1904, the asylum was provided with a complete installation of X-rays.

and Right Hon. Mr. C. J. C. D. East India Co., to consider the same at the meeting of their Board.

After a short debate, the Board resolved to accept the contract, subject to the following conditions, to be made by Dr. W. on the behalf of the Company, before the 1st July, 1851, to be entered into between the Company and the contractor, except that the amount of the sum to be paid to the contractor should remain as it is now. But, the contractor shall pay to the said Dr. W. the sum paid by him to the government for the supply of vegetables, and, if he does not do so, he shall be liable to make up the deficiency in his sum to the government for the supply of vegetables. The medical officer, engaged by the contractor, to be responsible for the health of the inmates of the asylum, shall be bound to report periodically to the medical officer of the asylum, and to be responsible for the working of a smallpox hospital for the use of the inmates of the asylum, and for the lighting of a constant fire in or near the asylum. The medical officer on the part of the Company, concerned by the health of the inmates of the asylum, shall be appointed by the Medical Department, while the few vegetable gardens to be purchased by the diet contractor for the use of the inmates of the asylum. The net profit of the vegetable farm amount to about Rs. 1,000/- a year.

Vaccination.—According to Dr. Hove, the Polish Swind, who visited Bombay in 1788, the first attempt at public vaccination was made in that year by Mr. Farmer (presumably one of the Surgeons of the East India Company), who "inoculated about thirteen hundred old and young, out of which he did not lose more than two." "This," adds Dr. Hove, "has remarkably abated the small-pox."¹ But no definite

¹ A medical committee expressed the following opinion in 1805:—"The treatment has resulted in decided improvement in the majority of the cases, and we consider that it should be continued for a further period of one year."

² For further particulars, see *Draughts President of the East* by C. Carteret-James, Bombay, 1850.

³ *Tours in Bombay: Government Selection XVI.*, 104. Dr. Hove says (same page):—"Small-pox has appeared in Bombay since the possession and commerce of Europeans." Small-pox, like measles, appears to have been known in India and China several centuries before the rise of Islam (*Nidana*, 101-103) and to have spread from Asia to Europe. Still Dr. Hove's information may

attempt to introduce vaccination was apparently made until the commencement of the nineteenth century, when Sir William Jenner, by securing the services of a series of volunteers who submitted to be vaccinated in the course of a voyage to India, was enabled to transmit cow-pox from arm to arm, until Ceylon and India were reached. It is also recorded that about the same date Dr. De Carro, a native of Goa, who was resident in Vienna in 1799, sent a portion of his lymph to the Earl of Elgin (1766-1841), then British Ambassador at Constantinople, who in turn transmitted it to Bombay. Meanwhile the Company's representatives in India were making every effort to impress the value of vaccination upon the minds of the people, who were stoutly opposed to the practice in the first instance. In 1803, the Bombay Government forwarded to the Court of Directors "twenty copies of a pamphlet recently published at this Presidency by Dr. George Keir, of the medical establishment, containing an account of the introduction of cow-pox into India," and added that "the zealous exertions of that gentleman have proved a principal means of securing the blessing of the discovery to this island":¹ while in other parts of India the public disinclination to vaccination was overcome to some extent by a pious fraud, in the shape of a Sanskrit poem on the subject composed by Mr. Ellis of Madras, and inscribed on old paper to give it an appearance of extreme antiquity.

During the Governorship of the Honourable Mountstuart Elphinstone (1819-1827) considerable success was achieved, the whole Presidency, including Bombay island, being divided into four charges, each under a European vaccinator. But the progress was necessarily slow in view of

be so far correct that, with the Portuguese, a fresh or fiercer form of small-pox may have been brought into Western India. If so, it explains why the small-pox mother is Sita (Sitala) the Cold, and why she cannot be pacified till she is made cool. Also the fact that in many of her images Sita carries a child in her arm, not on her hip; and finally why the begging devotees of Sita call themselves Padres or European priests and are perhaps the only Hindoo religious beggars who ask alms of Europeans as of right.—Bombay Gazetteer Materials III 563.

¹ Bombay Town and Island Materials, III, 564. An advertisement appears in the "Bombay Courier" of July 17th, 1802, to the effect that "Dr. Keir will inoculate children whenever they choose to apply" etc.

the fact that people of all classes believed small-pox to be spirit-caused, and that the only permissible remedy was to tie *nim* twigs to the cradle or bed of the patient, deck him with flowers, and perform other actions symbolical of the ejection of the disease.¹ To submit a child to medical treatment on western lines was held, and indeed is still considered by some of the lower classes, to be offensive to the goddess of small-pox. In the year 1858, the first Superintendent of Vaccination, the late Dr. Ananta Chandroha was appointed, the control of operations in the town having been vested up to that date in one of the professors of the Grant Medical College, and in 1872 an attempt was made to introduce compulsory vaccination in the island. The proposal, however, had to be dropped as premature ; and it was not until after the severe small-pox epidemic of 1875-76 that a Compulsory Vaccination Act (1 of 1877) was drafted and brought into force.

Since the introduction of that Act, Bombay has been divided for the purposes of vaccination into six districts, with one public vaccinator and two permanent public vaccine stations to each district. The entire control of the operations rests in the Bombay Municipality under Act III of 1907. Besides the central vaccine stations which are open daily, other stations are opened on fixed mornings in various parts of the city.

Up to the last decade of the nineteenth century, it was customary to vaccinate by a single puncture—a process which gradually ousted an indigenous method reported to be still in vogue in the Portuguese territories of Goa : but considerable controversy took place in the local press during the early eighties as to the amount of immunity guaranteed by a single puncture, and after the publication of the report of the Royal Commission on Vaccination between 1890 and 1900, this method was discontinued in favour of vaccination by multiple punctures. The latter

¹ The "Times of India" for the 6th June 1861 mentions the fact of a Parsi lady, whose child was attacked with small-pox, walking from the Fort to the Bhuleshwar temple on a Sunday afternoon carrying a pot of *chunam* (lime), which she allowed to drip on to the ground as she walked. At the temple she performed several ceremonies, paid fees to the guardians of the temple, and then returned home in the same manner. The Bhuleshwar temple has always had a special connection with the small-pox deity.

process has now yielded to vaccination by scarification, as by this method a larger dose of vaccine can be administered in infancy, and the bulk of the people, who, with the single exception of the Parsis, are much averse to re-vaccination, are thereby rendered more immune. One may however remark the fact that the occurrence in the city of severe epidemics, such as those of 1875-76 and 1899-1900, does induce many persons to be re-vaccinated. Of the former epidemic it is recorded that the public severely taxed the resources of the Government vaccination station by flocking thither in crowds, while during the course of the latter outbreak as many as 31,000 persons submitted to re-vaccination. Throughout the earlier portion of the nineteenth century, vaccination was performed from arm to arm; but in 1869 animal vaccination was introduced chiefly through the exertions of Surgeon-Major Blane, I.M.S., whose patience and tact went far towards allaying public opposition to the measure. The compulsory Vaccination Act of 1877 permits the use of animal lymph only, and makes inoculation with variolous matter penal. From 1877 to 1903 the lymph in use in the city was exclusively animal, either pure or preserved in capillary tubes. Since 1903 vaccination direct from the calf has been largely superseded by the use of glycerinated vaccine, which is far more economical and offers equally satisfactory results. The percentage of successful cases with fresh and preserved glycerinated lymph for the year 1909 was respectively 99.32 and 97.94. A further development, namely the use of chloroformed vaccine, is now being initiated.

Up to 1890-91 a steady increase both in the number of operations and the proportion of the population protected took place; but since 1896 a series of famine years, which enhanced the price of calves, and the annual recurrence of plague in the city have tended to retard further progress; while the removal of the Central Vaccine Depôt from the heart of the city to Parel and the high rents which have to be paid for the public vaccine stations in other parts of the city are to some extent responsible for the increased expenditure of late years. The city, however, no longer suffers from frequent

epidemics of small-pox; and when outbreaks do occur, they are far less virulent than in the period preceding the introduction of the Compulsory Vaccination Act.

The following table shows the annual number of deaths from small-pox before and after the introduction of the Compulsory Vaccination Act:—

Before the passing of the Act.				After the passing of the Act.			
Year.	Num- ber of Deaths.	Year.	Num- ber of Deaths.	Year.	Num- ber of Deaths.	Year.	Num- ber of Deaths.
*1850	1,308	1865	567	1878	357	1894	531
1851	510	*1866	1,079	1879	479	1895	270
*1852	1,003	*1867	1,055	1880	207	1896	701
1853	677	*1868	1,123	1881	35	1897	57
1854	232	*1869	1,725	1882	92	1898	55
*1855	1,088	1870	556	*1883	1,461	1899	440
1856	179	*1871	919	1884	112	*1900	3,018
1857	346	*1872	1,854	1885	55	1901	159
*1858	1,714	1873	714	1886	19	1902	268
1859	374	1874	261	1887	108	*1903	1,477
1860	166	1875	248	1888	482	1904	568
*1861	1,627	*1876	3,174	1889	304	*1905	2,161
1862	163	*1877	958	1890	150	1906	276
*1863	1,059			1891	108	1907	86
*1864	1,707			1892	541	1908	1,026
				1893	201	1909	473

* These were epidemic years.

The following table gives details of operations performed and of the departmental expenditure at decennial periods since 1850-51:—

	1850-51	1860-61	1870-71	1880-81	1890-91	1900-01	1908-09
Total number of operations.	7,584	8,642	11,500	16,126	20,709	22,026	28,978
Total number of successful operations.	6,540	7,315	8,358	14,508	19,457	14,035	16,411
Ratio per 5,000 persons vaccinated.	..	896	10.42	22.43	25.16	17.08	16.78
Total expenditure in rupees.	1,680	3,402	8,145	13,759	20,428	21,836	21,787
Cost of each successful case. Rs.	0.4-1	0.7-3	0.15-8	0.15-2	1.0-10	1.3-10	1.5-3

APPENDIX I

STATEMENT showing the number of deaths from various causes between 1848 and 1909.

Year.	Population.	Deaths from cholera.	Other bowel-complaints.	Deaths from fever.	Small-pox.	Other diseases.	Total number of Deaths.	Ratio per 1,000.
1848		69	1,090	4,859	839	3,194	10,051	17.75
1849		2,128	1,356	5,566	343	3,435	12,828	22.65
1850		2,997	1,245	5,555	1,308*	4,032	15,137	26.73
1851		5,485	1,321	4,808	510	3,826	15,950	28.17
1852	566,119	1,520	1,425	5,913	1,003*	4,161	14,022	24.76
1853		1,148	1,471	6,219	677	4,132	13,647	24.10
1854		3,507	1,763	8,219	232	3,820	17,541	30.98
1855		1,645	1,567	6,922	1,088*	3,640	14,862	26.25
1856		1,846	1,621	7,281	179	3,834	14,761	26.07
1857		2,181	1,735	7,857	346	5,707	17,826	31.48
1858		115	1,259	7,503	1,714*	3,746	14,342	25.33
1859		1,985	1,170	7,016	374	3,704	14,249	25.16
1860		1,961	1,179	6,226	166	4,877	14,409	25.45
1861		641	1,589	6,847	1,27*	4,310	15,014	26.52
1862		3,170	1,467	6,979	163	4,030	15,809	27.92
1863		2,209	1,643	9,078	1,059*	4,707	18,636	33.02
1864	783,980	4,847	1,503	12,593	1,707*	4,365	25,015	31.90
1865		2,887	1,581	18,767	567	4,729	28,511	36.39
1866		332	1,184	9,870	1,079*	4,400	16,865	21.51
1867		111	1,631	5,674	1,055*	7,029	15,500	19.77
1868		227	1,645	5,481	1,123*	7,226	15,702	20.02
1869		754	1,697	5,108	1,725*	8,429	17,713	22.59
1870		386	1,285	4,745	556	7,914	14,888	18.99
1871		263	1,346	6,341	919	7,195	16,064	20.49
1872		190	1,670	7,512	1,854*	7,764	18,990	29.46
1873		95	1,611	6,156	714	7,089	15,665	24.30
1874		20	1,648	5,403	261	8,164	15,496	24.04
1875		847	2,265	5,244	248	10,130	18,734	29.71
1876	644,405	378	1,979	5,867	3,174*	9,385	20,783	32.25
1877		2,550	3,847	12,832	958*	13,324	33,511	52.00
1878		1,183	3,078	9,944	357	12,437	26,999	41.89
1879		324	2,494	8,445	479	10,785	22,527	34.95
1880		50	1,728	7,513	207	11,668	21,146	32.81
1881		546	2,062	6,437	35	12,776	21,856	28.26
1882		192	1,618	5,453	92	13,113	20,468	26.47
1883		1,027	1,806	5,903	1,461*	13,333	23,530	30.43
1884		576	1,716	6,530	112	13,608	22,542	29.15
1885		598	1,545	6,648	55	13,004	21,850	28.25
1886	773,196	16	1,516	5,820	19	12,703	20,074	25.96
1887		269	1,640	5,612	108	12,884	20,513	26.53
1888		379	1,716	6,642	482	13,202	22,421	28.99
1889		462	1,724	7,266	304	13,622	23,378	30.23
1890		102	1,412	6,489	150	12,381	20,534	26.55

* These were epidemic years.

Year.	Population.	Deaths from cholera.	Other bowel complaints.	Deaths from fever.	Small-pox.	Other disease.	Total number of Deaths.	Ratio per 1,000.
1891		164	1,501	6,837	108	15,237	23,847	
1892		169	1,823	7,751	541	16,234	26,518	29.01
1893		147	1,698	5,844	201	15,252	23,142	32.26
1894		426	2,344	6,458	531	16,571	27,330	28.16
1895	821,764	90	1,813	6,404	270	16,504	25,081	33.25
1896		490	2,350	8,776	701	21,134	33,451	30.52
1897		1,265	3,551	6,951	57	36,072	47,896	40.71
1898		104	3,385	4,114	55	44,303	51,961	58.28
1899		111	4,286	5,063	440	46,534	56,434	61.23
1900		4,273	8,676	7,928	3,018*	55,455	79,350	68.07
1901		198	3,716	7,921	159	47,501	59,495	96.55
1902		75	3,269	4,518	288	40,264	48,414	76.66
1903	776,006	17	3,134	2,333	1,477*	43,552	50,513	62.38
1904		219	2,784	2,416	568	36,689	42,676	65.09
1905		26	3,391	2,878	2,161*	39,306	47,762	54.99
1906		1,241	4,778	4,882	276	41,697	52,874	61.54
1907	977,822	439	3,489	3,633	86	31,040	38,687	53.97
1908		95	3,184	3,403	1,026*	30,563	38,271	39.56
1909		727	2,585	2,800	473	28,293	34,878	39.13
								35.66

* These were epidemic years.

APPENDIX II.

Statement showing the number of Deaths from all Causes by Sex and Months from 1900 to 1909.

APPENDIX III.

Statement showing names and other details of Medical Institutions in Bombay City.

No.	Name of Institution.	Class of Institution.	Date when opened.	Average Daily Attendance.	Number of Patients treated in 1901.	Number of Patients treated in 1902.	Expenditure.
1	St. George's Hospital	...	...	1889	111·0	4,415	4,153
2	Jamsetji Jijibhoy Hospital	...	...	1845	248·0	40,845	2,76,020
3	Sir Cowasji Jehangir Ophthalmic Hospital	...	...	1866	42·6	27,649	1,29,307
4	Bai Motlibai Wadia and Sir Dinsra Maneckji Petit Hospitals and Dwarkanadas Lalubhai Dispensary for Women and Children	...	1892	69·8	151·8	18,038	10,131
5-7	(a) Pestonji Hormasji Camna and (b) Bonmanji Edalji Alibless Hospitals, and (c) Jafar Suleman Dispensary for Women and Children	...	1886 (a) 1890 (c) 1886	85·6	70·2	13,112	33,458
8	Northcote Police Hospital	...	...	...	168·0	11,194	10,199
9	Byculla Central Schools Hospital	...	...	...	16·1	2,075	2,862
10	H. M. R. I. M. Dockyard Dispensary	...	...	...	...	3·7	63,910
11	H. E. the Governor's Establishment Dispensary	...	...	...	...	4,766	15,423
12	David Sassoon Industrial Reformatory Institution	...	before 1866	...	33·9	6,376	...
13	Gokuldas Tejraj Hospital	...	...	...	47	3,486	5,992
14	Acworth Leprosy Asylum, Matunga	...	...	...	...	6,593	...
15	Bombay Port Trust Dispensary	...	...	1874	108·8	71·9	15,271
16	Arthur Road Hospital	...	...	1891	367·6	12,355	12,355
17	Maratha do.	...	...	...	...	583	61,317
18	Colaba do.	...	...	...	55·0	8·8	49,327
19	Fort Dispensary	...	...	1892	85·0	3,796	4,739
20	Frere Road do.	...	...	1898	31·0	1,661	1,425
21	Elphinstone Road Dispensary	...	...	...	...	3,070	848
22	Colaba District No. 1 Dispensary	...	...	...	NH	31·8	Closed.
			1902	...	NH	...	11,686
			...	...	NH	...	...
				...	NH	...	4,409
				...	NH	...	7,331

23	Kolsa Mohla Dist. No. 2 Dispensary	...	III.	1902	1899	Nil	3,874
24	Dongri Dist. No. 3 Dispensary	...		1902	1902	Nil	10,263
25	Cathedral Street Dist. No. 4 Dispensary	...		1897	Nil	10·1	3,722
26	Grant Road District No. 5 Dispensary	...		1902	Nil	3·4	8,978
27	Kandevadi Dist. No. 6 Dispensary	...		...	...	12·6	3,195
28	Beltasis Road District No. 7 Dispensary	...		...	...	25·1	4,591
29	Foras Road District No. 8 Dispensary	...		1902	Nil	Nil	0,374
30	Parel Dispensary	...		...	...	10,150	10,000
31	Ripon Road do.	...		...	...	10,150	11,638
32	Curry Road do.	...		...	...	...	...
33	Naigaon do.	...		...	...	9,150	11,638
34	Jehangir Nasarwanji Wadia Dispensary, Mahim	...	IV.	1900	1867	Nil	...
35	Parsi Lying-in Hospital	...		1887	50	64·0	5,057
36	Shet Jehangirji Hormazdji Sukhia Charitable Dispensary	...		1897	Nil	...	...
37	Ratansi Mulji Charitable Dispensary	...		1892	Nil	...	...
38	Fort Gratuitous Dispensary	...		1852	Nil	...	...
39	Bai Moolbai Peerbhoy Charitable Dispensary for Khoja Women and Children	...	V.	1865	Nil	...	...
40	Bombay Native Dispensary	...		1836	Nil	...	...
41	Nasarwanji Maneckji Petit Charitable Dispensary	...		...	Nil	...	...
42	Lowji Wadia Dispensary, Parel	...		1858	Nil	...	...
43	Shankarsett Charitable Dispensary	...		1871	Nil	...	...
44	Khoja Sajjanbhai Meerlal Charitable Dispensary	...		1891	Nil	...	...
45	Bai Hirabai Byrauji Jijibhoy Charitable Dispensary	...		1891	Nil	...	...
46	Sir Mangaldas Nathubhai Charitable Dispensary	...		1895	Nil	...	...
47	Shet Varjiwandas Madhavdas Charitable Dispensary	...		...	Nil	...	...
48	Meher Charitable Dispensary	...		...	Nil	...	...
49	Maneckji Nasarwanji Petit Charitable Dispensary	...		...	Nil	...	...
50	Sha Damodar Tapidas Charitable Dispensary	...		1903	Nil	90	6,926
51	Babu Pannalal Punamehand Jain Char. Dispensary	...		1905	Nil	90	7,478
52	B. B. & C. I. Railway Dispensary, Parel	...	VI.	Before 1873	39·3	Nil	3,000
53	G. I. P. Railway Hospital, Byculla Dispensary, Parel	...		...	219	8,913	2,675
54	Do.	...		...	160	12,507	12,142
				...	133	3,097	7,983

† Not opened for Indoor patients.

CHAPTER XIII.

PLACES AND OBJECTS OF INTEREST.

Admiralty House¹: The earliest reference to an Admiralty House was made in 1754 by Edward Ives, who remarked that:—"The Admiral's family resided at the Tank House (so called from a large tank or pond near to it), and here as well as at all their other settlements the Company allowed the Admiral and his principal attendants palanquins, over and above the five pagodas a day which were given him to defray part of the expenses of his table."² This house seems to have been built as a Government House by Sir J. Wyborne (Deputy-Governor, 1685-1692); and according to a deed of 1715 was situated to the east of Bombay Green and to the north of the Honourable Company's bandar.³ In 1701 Admiral Cornish, who succeeded Admiral Steevens, declined to live in the house on the ground that it was so full of vermin as to be scarcely habitable, and consequently the Bombay Government rented Mr. Whitehill's house on the site of the north-west corner of the present Elphinstone Circle (now partly occupied by Messrs. Kemp & Co.'s buildings), until about 1764, when Mr. Hornby's House, now the Great Western Hotel, was taken for the purpose. Other houses than this may have been rented occasionally between 1764 and 1770; but from the latter date until 1795, Mr. Hornby's spacious mansion was devoted to the use of the Commander-in-Chief of the fleet in India. It was probably about 1795 that Admiralty House was moved to the great block of buildings to the north of Forbes street and west of Apollo street, used in 1894 as Messrs. Finlay Moir and Company's offices, which Dady Nasarwanji constructed between 1790 and 1800. This house

¹ Voyage from England to India in 1754.

² Bombay Gazetteer Materials III., 565. The house was bought by the Company from John Hill in 1715 for Rs. 3,000 and re-sold to him again, soon afterwards. Admiral Charles Steevens died in the house in 1761. See Grose's plan of Bombay (1750), Vol. I., facing page 32.

must have been a centre of business and gaiety in 1795 when Rear-Admiral Rainier left Bombay in charge of the expedition against Ceylon ; in 1810 when Admiral Bertie and the Bombay Marine set out against Mauritius ; in 1811 when Rear-Admiral Stafford led an expedition against Java ; and in 1824 when Commodore Grant fitted out the *Asia* built in Bombay, and led an expedition against Rangoon. Meanwhile Mr. Hornby's House had served since 1800 as the Recorder's Court, though for some little time after its establishment the Admiralty stores continued to be stored in the house.

Between 1840 and 1864 Admiralty House, or rather the Commodore's House, was probably some bungalow in the Marine Lines. In the latter year the Secretary of State directed the Bombay Government to provide a house for the Commander-in-Chief of the Naval Forces in the East Indies, and in accordance with these orders a bungalow at the south end of Marine Lines, which Government had purchased in 1860 for Rs. 14,877, was handed over to him. The Admiral took possession of it on the 22nd November 1864; and this house continued to serve as Admiralty House up to 1903. . . . In 1905 the new house facing the south end of the Cooperage at the corner of Wodehouse road was completed. The bungalow in Marine Lines has now been demolished.¹

Anthropological Society.—The Anthropological Society of Bombay was founded in April 1886 for the purpose of promoting the prosecution of anthropological research in India, by investigating and recording facts relating to the physical, intellectual and moral development of man, and more specially of the various races inhabiting the Indian Empire.² The affairs of the Society are managed by a council composed of a President, 2 Vice-Presidents, a Secretary and Treasurer, and 5 mem-

¹ For full details of the earlier history, see *Bombay Gazetteer Materials*, pp. 565—572.

² The founder and first President of the Society was Edward Tyrell Leith. Among the most distinguished members have been H. R. H. the Duke of Connaught, Sir Monicr-Williams, the Right Reverend Robert Caldwell (Bishop of Tinnevelly), Professor T. H. Huxley, Professor Montegazza, Professor J. Darmesteter, Dr. Adolf Bastian, Count Angelo de Gubernatis, Dr. Paul Topinard, and Professor Rudolf Virchow.

bers : and monthly meetings are held in the rooms of the Bombay Branch of the Royal Asiatic Society in the Town Hall, at which papers upon matters of anthropological interest are read and discussed. These papers, together with reports of proceedings, are published in a journal, of which the first number appeared in December 1886, and which has now reached its eighth volume. The Society established a small museum and library, both of which were handed over in 1896 to the Bombay Branch of the Royal Asiatic Society in return for the use of the latter Society's rooms. The former, which contains some interesting exhibits, may eventually be housed in the Prince of Wales' Museum of Western India. The Society corresponds and exchanges publications with similar scientific societies in Great Britain, Australia, America, Germany, Austria, Italy, and Japan. The annual income of the Society is about Rs. 700, including interest on an invested sum of Rs. 2,500.

Bai Sakarbai Dinshaw Petit Hospital for Animals.— The Bai Sakarbai Dinshaw Petit Hospital for Animals was opened by Lord Dufferin in 1882, and owes its existence in great measure to the activity of the Bombay Society for the Prevention of Cruelty to Animals. A resolution to establish a dispensary having been formed and several Bombay merchants having offered donations in cash and kind, Sir Dinshaw M. Petit, who was greatly interested in the work, offered a large plot of land with a bungalow at Parel, valued at that date at Rs. 45,000, for use as a hospital, provided that the building should bear his wife's name. The hospital was opened for work in 1884 with three wards, one accommodating 26 horses and the other two go bullocks, and, thanks to the liberality of several Bombay residents, has considerably expanded since that date. At the present date (1910) the hospital contains three wards, accommodating 66 horses, an isolation ward for 16 horses, and a special loose box for one tetanus patient and a colic ward with two special loose boxes for horses suffering from colic. There are also 5 cattle wards, accommodating 266 herd of cattle, and a cattle operating shed and two dog wards for 28 dogs. An operating theatre is about to be built. The annual expendi-

ture of the hospital is about Rs. 50,000, and the income is chiefly derived from donations. Under the terms of an agreement with Government, the hospital is entitled to the gratuitous veterinary services of the teaching staff of the Government Veterinary College, and in exchange provides a large bungalow belonging to the trustees of the hospital for the use rent-free of the College. An executive committee of the Society for the Prevention of Cruelty to Animals administers the affairs of the hospital, which levies certain fees for the admission of animals. All classes of animals are treated at the hospital both as indoor and outdoor patients comprising horses, cattle dogs and various other pet animals and birds. In 1909, 3,171 animals were treated as inpatients in the hospital, the various classes of animals treated comprising 745 horses, 1,906, cattle and 520 dogs. The number of out-patients treated was 1,106.

Bank of Bombay.—By the year 1836 the rapid extension of commerce and a considerable increase of capital in Bombay impressed upon the public mind the need of a bank upon the island; and accordingly on the 26th December, 1836, a public meeting was held in the office of Messrs. John Skinner and Co., which adopted "a prospectus for a bank for the Presidency of Bombay" and appointed a provisional committee to secure a Charter for it.¹ It was agreed that the Charter should be modelled on that of the Bank of Bengal; that the business of the bank should be confined to receiving deposits, keeping cash accounts discounting bills and drafts and other investments, and to issuing bank notes in the current coin and bank post-bills, payable at short dates; that the capital of the bank should be 30 lakhs, divided into 3000 shares of one thousand rupees apiece; and that 300 shares should be reserved for Government. Within a month from the date of the meeting, applications for shares were received for nearly double the agreed amount of 30 lakhs, and with

Foundation.

¹ For several years previous the average balance of sums placed in the Treasury by a few merchants only had amounted to more than 20 lakhs. This fact, coupled with the serious inconvenience in the transfer of large sums arising from the currency, and with the need of a place of discount for traders, led the public to believe in the expediency of a bank similar to the banks already existing in Calcutta and Madras.

the sanction of the Governor-in-Council the capital was raised to 50 lakhs. The request for a Charter was approved by the Bombay Government; and to prevent delay in the event of the Court of Directors refusing to take the shares reserved for Government, two forms of Charter were prepared and executed, one of which provided for the holding of shares by the Honourable Company and the other omitted this provision. Both Charters were despatched to England in January 1837, the opening of the bank being deferred until one of the Charters should be returned with the confirmation of the Court. In the meantime, however, a second public meeting was held, at which it was resolved that if neither Charter was sanctioned within eight months, a Joint-Stock Bank should be established, the same committee appointed to watch the interests of the Chartered Bank being nominated for the Joint-Stock Bank.

Great delay occurred in the confirmation of the Charter by the Court of Directors. Not only was the project stoutly opposed by certain Bombay capitalists, who had hitherto enjoyed a practical monopoly of banking; but prior to the arrival of the Despatch from the Bombay Government, the Directors had asked the opinion of the Government of India on a scheme for a Bank of India, and consequently declined to deal with the Bombay proposals until an answer had been received from India on the larger question. The greatest impatience was manifested in Bombay; and after extending the period of eight months originally fixed for opening the Joint-Stock Bank, and on learning from their representative in England in December 1837 that the Court of Directors were as far from sanctioning the Charter as ever, the subscribers to both banks held a public meeting on the 20th March 1838, and resolved that if the Charter had not been sanctioned by the 1st October 1838, all accounts relating to the Chartered Bank should be closed.

But on the 29th September 1838, just as the foregoing resolution was about to be carried into effect, the Court of Directors signed a despatch sanctioning an Act of Incorporation, which together with the proposed Act was forwarded to the Bank Committee by the Bombay Govern-

ment on the 27th November. The Act was accepted at a general meeting of the Bank on the 18th December 1838 ; but further delay was caused by the refusal of the Government of India to recognise the right of subscribers to the benefit of the Act of Incorporation, and by their decision to offer for sale by public auction all shares except those reserved for Government. Against this decision the Bank Committee appealed in the strongest terms to the Governor-General, Lord Auckland, and also in February, 1839, to the Court of Directors, pointing out at the same time that in spite of the Directors' orders the draft Act of Incorporation differed materially from the Act incorporating the Bank of Bengal. Eventually in December 1839 formal intimation was received that the Court of Directors had decided the question in favour of the subscribers, and that the publication and passing of the Charter of the Bank would take place without delay. The proprietors on the date of the Court of Directors' Despatch (September 29th 1838) were chosen as those on whom the Act of Incorporation should be conferred. On the 17th February, 1840, Act III of 1840, constituting the Bank, was passed by the Government of India ; and on the 15th April 1840, the Bank commenced business with a capital of $52\frac{1}{4}$ lakhs, including three lakhs subscribed by the Bombay Government. Three of the nine Directors were nominees of Government : and the Bank enjoyed the privileges of a note issue, the maximum limit of which was fixed at two crores, and the smallest denomination of notes issued being Rs. 10.

Up till 1863 the Bank prospered under prudent management, paid good dividends to the shareholders and never, it is said, incurred greater losses in the aggregate than Rs. $\approx 5,000$.¹ In November 1848, it faced a curious panic which lasted for some days and was caused by a few

History
1840-63.

¹ The Bombay Bank Commission remarked in their report :— "Another element of prosperity was the power to issue so large an amount of notes ; but in 1860 the Government of India determined to deprive the Bank of this power and establish a paper currency of its own. As compensation for this, Government proposed to entrust the management of the General Treasuries, Pay Office and Currency Department, with their respective cash balances, to the Bank. But this proposal was subsequently modified, and only the Treasuries and Pay Offices were transferred to the charge of the Bank."

forged notes being put into circulation in the city, payment of which was refused by the Bank. This being the first case of forgery of this kind known in Bombay, the run upon the Bank was for a time excessive.

In 1851 the Board of Directors determined, in consequence of new arrangements for the note issue, to prepare an Act similar to that of the Bank of Bengal and empowering the increase of the Bank's capital to 210 lakhs. This Act (X of 1853), which received the assent of the Governor-in-Council, differed from Act III of 1840 in that (a) it allowed the discount of any negotiable security; (b) it allowed advances to be made on the security of shares in public companies in India and did not require that all the calls on such shares should be paid up; (c) it allowed an advance to any one firm for a larger amount than 3 lakhs and for a longer period than 3 months; (d) it allowed advances on all goods and merchandise, whether perishable or not; (e) it contained no definite provision against the overdraft of accounts; (f) it contained no provision prohibiting any discount or loan, unless the cash in the bank equalled one-fourth of all the claims outstanding against it at the time; and (g) it empowered the proprietors to increase the capital at a special general meeting, provided such increase did not exceed 2 crores and 10 lakhs.

The passing of the Act was at once followed by an extraordinary increase of the Bank's capital. At a special general meeting held on the 21st September 1853, it was resolved to double the capital by the issue of 5,225 new shares of one thousand rupees each; while at a second meeting on the 7th March 1864, suggested by Mr. Cowasji Jehangir, a proposal to further enhance the capital by 52½ lakhs was unanimously carried. The latter resolution was however rescinded on the 9th June 1864, in favour of a proposal to issue one new share to every old share, thus making the paid-up capital 209 lakhs.¹

¹ "Much fault was found with the Directors for these increases of capital. But the first increase of 52½ lakhs was necessary and did no more than supply the deficiency occasioned by the Bank's loss of their note circulation; while the second increase was largely justified by the increased trade of the port, the opening of several branch banks and the inadequacy of the Bank's capital to meet the public wants during great financial pressure. The final increase of capital by 10½ lakhs was clearly unwise. Had the Bank only

Such were the conditions at the outset of the most eventful period in the history of the Bank (June, 1864 to April, 1865). By 1863 symptoms of wild speculation, consequent upon the extraordinary rise in the price of cotton caused by the American War, had already appeared, and they developed with amazing rapidity on the foundation in June, 1864, of the Bombay Reclamation (Back Bay) Company, and the Financial Association of India and China. During the remainder of that year and the early part of 1865, companies were floated for every imaginable purpose, from banking to livery and veterinary supply, their shares in most cases being sold at high premia; and the Secretary of the Bank, arrogating to himself unrestricted power and unchecked by any supervision on the part of the Directors, advanced many lakhs of rupees to individuals and ephemeral companies on no other security than a promissory note. The discount list was discontinued; no loans were submitted for sanction to the Board or the weekly committee; money was constantly advanced to persons already heavily indebted to the Bank; the only restriction placed on the Secretary by the resolution of August 6th, 1863, regarding advances on the security of shares, was practically evaded; and large sums were loaned for much longer periods than three months, no difficulty being made about renewal if the interest was regularly paid. The failure of the Bank was thus rendered inevitable, contributory causes being the negligence of the Presidents and Directors, the exceptional nature of the period which demanded more than ordinary vigilance from everyone connected with the Bank, and the complete absence of sound legal advice and assistance. At a special general meeting held on the 13th January 1868, it was resolved to wind up affairs and to appoint a liquidator, who issued a report on the 12th November 1868, showing that of the paid-up capital a sum of Rs 1,88,99,334 had been irretrievably lost.

The third period of the Bank's history commences in 1868-1910. January 1868, when the Bank was reconstructed under the

waited for the effect of the increase determined upon on the 7th March 1864, the last 52½ lakhs would probably never have been raised, since the Bank had more money than it could safely invest."—Report of the Bombay Bank Commission.

title of the New Bank of Bombay, Limited. Its capital was fixed at one crore of rupees, divided into 20,000 shares of five hundred rupees apiece ; a prospectus was issued on the 19th July 1867 ; and subscriptions were invited from the shareholders of the old Bank and the public for the first issue of 10,000 shares at par. The allotment, in which shareholders of the old Bank had a preference, was made on the 16th December, 1867, and the shares were paid up in full by March 1868. Government contributed 6 lakhs and remained shareholders until 1875, when their shares were sold. Of the remaining 10,000 shares, 8,327 were issued to shareholders of the old Bank at par and 1,673 were privately sold by the Directors at a premium of 19%. In 1876 the Presidency Banks Act was passed, under which the Bank, under its earlier title of Bank of Bombay, as also the other Presidency Banks of Bengal and Madras were constituted and have since continued to work. By this Act the Bank's operations are confined to India and are strictly circumscribed. Since 1868 the Bank has made steady progress, and in addition to building up a large reserve fund has paid gradually enhanced dividends to its shareholders. In 1878 and again in 1898 it passed through a period of great anxiety. The semi-erisis of the former year was in great measure a reflection of the failure of the City of Glasgow Bank ; while the difficulties of 1898 were due to shortage of money caused by an extraordinary combination of political and financial events. For scarcely had the effects of the famine of 1896-97 disappeared, when trouble arose on the North-West Frontier, which still further deranged the finances of Government. So great was the strain that in the autumn of 1897 Government were compelled to discontinue remittances to England and to recall previous remittances by buying drafts on India in London. These facts, coupled with the low level of trade balances in 1897-98, and the fact that no rupees had been coined since 1893, produced a very severe strain on the money market and raised the Bank rate from 10 per cent. in January 1898 to 13 per cent. in February, at which figure it remained until May when it was reduced to 12 per cent.

The tension was gradually relieved after the middle of June by a rise of the trade-balance in favour of India, by considerable imports of gold for currency purposes and by large disbursements by Government in payment of Council drafts.

The Reserve Fund, which is held entirely in public financial securities, now (1909) amounts to 103 lakhs, its progress condition and business by quinquennial periods since 1868 being shown in the subjoined table :--

In thousands of rupees (000s omitted).

Year.	Rupees.	Year.	Rupees.	Year.	Rupees.
1868	4	1883	24,25	1898	70,00
1873	13,00	1888	26,50	1903	84,00
1878	22,00	1893	41,00	1908	1,01,00

The average annual net profits earned by the Bank at different periods have been :—1868 to 1877, 7·58 lakhs ; 1878 to 1887, 9·59 lakhs ; 1888 to 1897, 14·88 lakhs; 1898 to 1907, 18·11 lakhs.

The dividends paid to shareholders since 1868 are shown in the following table :—

Year.	Per Cent.	Year.	Per Cent.	Year, Per Cent.	
1868	4·79	1882	9·50	1897—1900	11
1869—71	5·50	1883	7·50	1901	12
1872	7·50	1884	9·50	1902—03	11
1873—74	8·50	1885	7·50	1904—05	12
1875—76	7·50	1886	9	1906	13
1877—78	8·50	1887	10·50	1907	13
1879	6·50	1888	11·50	1908	13
1880	7·50	1889—94	10	1909	13
1881	8	1895—96	12		

The Bank deals with two classes of deposits, namely, Government and "Other" deposits. The former were considerable in the early days of the Bank's existence, but were largely reduced in 1874 and now form only a small proportion of the total deposits.

Of "Other" deposits, there are current deposits payable at call and bearing no interest ; fixed deposits of Rs. 500 and upwards bearing interest varying from 4 to 3 per cent and Savings Bank deposits of sums varying from 4 annas

to Rs. 1,000, bearing a fixed interest of 3 per cent. The increase during recent years of these three classes of deposits jointly is shown in the following table :—

Year.	Average Balance in Lakhs.	Year .	Average Balance in Lakhs.	Year.	Average Balance in Lakhs.
1868—72 ...	Rs. 196	1883—87 ...	211	1898—1902 .	Rs. 414
1873—77 ...	140	1888—92 ..	357	1903—07 ...	693
1878—82 ..	206	1893—97 ...	357	1909 ...	963

The Bank is authorised to discount bills, and to advance and lend money and open cash credits upon securities detailed in the Presidency Banks Act, and is also authorized to grant advances and loans to the Secretary of State for India in Council without any specific security.

The following is a comparative statement of the Bank's total annual advances and discounts since 1868 :—

Period.	Average Amount in Lakhs.	Period.	Average amount in Lakhs.
1868—72 ...	Rs. 115	1888—92 ...	Rs. 288
1873—77 ...	160	1893—97 ..	281
1878—82 ...	190	1898—1902 ...	580
1883—87 ..	221	1903—07 ...	540
		1909	651

The Bank rate for loans against Government securities usually reaches a maximum during the period January to April in each year and touches its lowest point between July and September. The average annual rate for loans since 1868 has been as follows :—

Year.	Rate per cent.	Year.	Rate per cent.	Year.	Rate per cent.	Year.	Rate per cent.
1868 ...	5·19	1879 ...	5·78	1890 ...	6·27	1901 ...	5·43
1869 ...	5·43	1880 ..	5·01	1891 ...	3·05	1902 ...	4·84
1870 ...	5·25	1881 ...	5·69	1892 ...	3·50	1903 ...	5·09
1871 ...	5·08	1882 ...	6·09	1893 ...	4·90	1904 ...	4·48
1872 ...	5·10	1883 ...	6·60	1894 ...	5·49	1905 ...	5·09
1873 ...	4·62	1884 ...	6·58	1895 ...	4·44	1906 ...	6·26
1874 ...	6·54	1885 ...	4·94	1896 ..	5·47	1907 ...	5·94
1875 ...	7·23	1886 ...	6·42	1897 ...	7·85	1908 ...	5·92
1876 ...	6·55	1887 ...	5·72	1898 ...	8·43	1909 ...	5·14
1877 ...	7·52	1888 ...	5·73	1899 ...	5·87		
1878 ...	5·08	1889 ...	6·74	1900 ...	5·35		

Amongst other business transacted by the Bank may be mentioned the buying, sale, receipt and safe custody of securities; the issue of post bills and of drafts and telegraphic transfers on its various branches; the charge of the Government Treasury; the management of all the business at Bombay, of the registered Public Debt and of securities of the Government of India; the charge of the various loans issued by the Municipal Corporation of Bombay, the Bombay City Improvement Trust, and of a portion of the loans issued by the Bombay Port Trust. Up to 1896 the Government Savings Bank was also managed by the Bank but was transferred in that year to the charge of the Post Office. With a steady increase in dividends and regular additions to the reserve fund, the value of Bank shares has been gradually enhanced, the present (1909) quotation being Rs. 1,500 per share. The following statement shows the market quotations on the 31st December in each year:—

Year,	Market value per share	Year.	Market value per share.	Year.	Market value per share.	Year.	Market value per share.
1870 ...	602 $\frac{1}{2}$	1880 ...	740 $\frac{1}{4}$	1890 ...	940	1900 ...	1,255
1871 ...	650	1881 ...	741	1891 ...	980	1901 ...	1,250
1872 ..	715	1882 ...	787 $\frac{1}{2}$	1892 ...	1,052 $\frac{1}{2}$	1902 ...	1,297 $\frac{1}{2}$
1873 ...	773 $\frac{3}{4}$	1883 ...	757 $\frac{1}{2}$	1893 ...	1,175	1903 ...	1,295
1874 ...	735	1884 ...	760	1894 ...	1,310	1904 ...	1,302 $\frac{1}{2}$
1875 ...	677 $\frac{1}{2}$	1885 ...	725	1895 ...	1,475	1905 ...	1,400
1876 ...	695	1886 ...	745	1896 ...	1,350	1906 ...	1,400
1877 ...	696 $\frac{1}{4}$	1887 ...	791 $\frac{1}{4}$	1897 ...	1,320	1907 ...	1,390
1878 ...	705	1888 ...	925	1898 ...	1,197 $\frac{1}{2}$	1908 ...	1,487 $\frac{1}{2}$
1879 ...	690	1889 ...	920	1899 ...	1,265	1909 ...	1,500

The Bank has thirteen branches,¹ at Ahmadabad, Broach, Surat, Rajkot, Poona, Jalgaon, Sholapur, Karachi, Hyderabad, Sukkur, Akola, Amraoti, and Indore, all of which are in charge of the local Government treasuries. The Gujarat and Berar branches are chiefly engaged in financing the cotton and mill industries, while the Sind branches principally finance the wheat crop.

Branches
and Pre-
mises.

¹ In 1864 a branch of the old Bank of Bombay was established in Bhavnagar and carried on business until the failure of the Bank.

The original premises of the Bank were in the building now (1910) occupied by Messrs. Ralli Bros. in Rampart Row; and most of the daily business was transacted on the floor now tenanted by Messrs. Badham, Pile and Co.¹ About 1860 the Bank was removed to a new stone building, now the Currency Office; and in 1862, when the Elphinstone Circle scheme was brought forward, the Bank took up land there and commenced the erection of the present building, which was completed, and to which the Bank was removed, in 1866. The Currency Office building was then sold by public auction to the Presidency Bank, one of the mushroom associations which sprang up during the share mania, but two years later Government, having decided to have a currency office of its own, purchased the building from the Presidency Bank at a price which gave the latter a profit of two lakhs.

Bombay Art Society.—The Bombay Art Society was founded in 1888 with the object of encouraging art, particularly among amateurs, and of educating the native public to an appreciation of its merits. Since that date eighteen exhibitions have been held, of which three were held in the Secretariat, two in the Town Hall, and the remainder in the School of Art building. About 10,000 pictures have been exhibited and more than Rs. 20,000 has been distributed in prizes. The Society has also held an annual conversazione during the last few years, at which private collections of porcelain and pottery, collections of water-colour sketches, and examples of embossed leather work have been exhibited. The Society depends for its funds upon the subscriptions of members and has from time to time also received grants from Government. The publication of a journal is under consideration.

Bombay Bacteriological Laboratory.--The Bombay Bacteriological Laboratory, which occupies Old Government House, Parel, was originally opened by Mr. Haffkine in a small room in the Petit Laboratory on the 8th October, 1896, under the title of the Plague Research Laboratory.

¹ This building is described in the Bombay Times of the 28th March, 1840, as having been formerly occupied by Messrs. Nicol and Co. and Mancharji Nasarwanji, and as "nearly in front of the present temporary entrance into the Fort."

While the laboratory acts as a general research institute for the Bombay Presidency, plague research still remains one of its chief duties. Here Mr. Haffkine first prepared his plague prophylactic, and here the Plague Research Commission, working upon facts and materials accumulated by the staff of the Laboratory throughout a period of ten years, made their discoveries in connection with the aetiology of plague. Here also the second Plague Research Commission has been working since 1905.

The plague prophylactic or anti-plague vaccine is a culture of the plague-bacillus, which, after growing in broth for a period of at least six weeks, is sterilised or killed, carbolised and then placed in hermetically-sealed glass bottles. Each bottle contains as a rule 20 cubic centimetres of the vaccine, which is the equivalent of five full doses. The broth or soil in which the plague-germs are cultivated is manufactured from goat's flesh or wheat flour. The plague germ is isolated either from the blood or the *bubo* of a patient suffering from the disease, and is purified by growing it in test-tubes containing broth-jelly, which is made by adding seaweed known as *agar-agar* or *chini ghas* to the liquid broth. The germ is then thoroughly identified as the plague bacillus by submitting it to a number of tests, is cultivated in a Pasteur flask for a period of not more than 14 days, and is finally multiplied by transference to several larger flasks, each containing one litre of broth. These flasks, sown with the plague-germs, are placed in rows on long tables, and are kept there in semi-darkness for a period of three months. During this period the plague-germs multiply enormously, so that the broth, which was clear when brought into the room, becomes extremely turbid. The germs in these flasks are, after a further test, killed by being subjected to a temperature of 55°C or 131°F for fifteen minutes—a process effected by submerging the flasks in hot water. The vaccine thus formed is then introduced into special glass bottles by a patent aseptic process, and these bottles are despatched from the laboratory for use in various parts of India. Since the institute opened up to the end of 1909 the total number of doses sent out was more than 8 million.

Besides preparing anti-plague and other vaccines the laboratory also serves as a pathological diagnosis institute. Pathological specimens of all sorts are examined and reported on. Slide preparations made from blood, ulcers, etc., are stained and examined, serum sent in blood capsules is tested, sections from tumours are prepared, diseases of animals, such as plague in rats, rabies in dogs and anthrax in cattle, are reported upon. Mosquitoes, fleas, biting-flies and other insects are examined and identified, as also are snakes. Scientific apparatus, chemicals, stains, sera, etc., are supplied to Government hospitals and dispensaries. According to the figures for the last ten years the average annual cost of the laboratory has been approximately Rs. 1,34,489.

Bombay Baroda & Central India Railway Offices.—The administrative offices of the Bombay, Baroda and Central India Railway Company were originally located at Surat, whence they were removed to Bombay about the year 1863 and located at Lal Bagh, Parel. Thence they were moved to Dhanji street, Grant Road, and from there to Medows street and finally to Church Gate street where they occupied the building now (1909) used by the Royal Insurance Company. In 1894 the present offices, opposite Church Gate station, were commenced and were completed in 1899 under the direction of the architect, Mr. F. W. Stevens, at a cost of 7½ lakhs. The building is faced with blue basalt stone, and the domes, mouldings, capitals, columns, cornices and carvings are in Kurla, Dhrangadhira and Porbander stone. The length of the west façade is 276 feet, and the height of the central tower is 160 feet. The central gable is crowned by a group of figures representing "Engineering" from the studio of Mr. Roscoe Mullins of London. Two carved heads of Colonels French and Kennedy, the pioneers of the Company, also by the same sculptor, are placed in the circular panels between the arches of the central carriage porch on the west. These have weathered badly and are shortly to be replaced by facsimiles in bronze, prepared by Mr. C. Burns. The building consists of three floors, devoted to offices, and in the centre below the dome is an extra floor for the storage of records. The main entrance

hall, facing Church Gate station, is 25 feet square and is floored with coloured marble. The ceiling is of panelled teak, decorated in light shades of cream and gold. From this hall corridors lead down the entire length of the building and give access to the various offices. On the ground floor are the season-ticket office, the chief cashier's office and the departments of the Chief Medical Officer, the General Traffic Manager and the Traffic Superintendent. On the first floor are the offices of the Locomotive Superintendent, the Secretary, the Agent, the Police Superintendent and the Chief Engineer, while the whole of the second floor is occupied by the Audit department with the exception of the central room under the tower, which is reserved for the use of officers of the Company. A printing-press is located in the record room in the tower.¹ The building was partially destroyed by fire on the 15th November 1905, during the illuminations in honour of the visit of T. R. H. the Prince and Princess of Wales. The damaged portion was rebuilt a year later under the supervision of Mr. C. F. Stevens.

Bombay Club.—The Bombay Club arose out of the old Indian Navy Club, which was opened in 1845 and dissolved in 1862, and possesses relics of the latter in the shape of a Burmese bell in the entrance hall and several handsome candelabra. The club-house was originally situated in Rampart Row, next to the present offices of the P. and O. S. N. Company, and moved in 1875 to its present quarters in Esplanade road. Situated in the heart of the European business quarter and close to the High Court, it is largely frequented by merchants, bankers, brokers, solicitors and barristers.

Bombay Hunt.—The first notice of a pack of hounds in Bombay belongs to the year 1830, prior to which date sport was confined to hunting with a "bobbery pack" and to annual "rides" round the island. In 1810, for example, the programme of the ride consisted of breakfast at Malabar Point at 9 a.m., then a sharp trot to "the Breach," Love Grove and Varli, ending up with tiffin at one o'clock in Mahim college. After tiffin the party rode

¹ For a more detailed description, see Times of India of 10th February 1894.

led to the disbanding of the hunt in March 1863.¹ In 1870, a well-known sportsman named Hartopp, who was passing through Bombay, was asked to send out a double pack from Lord Fitzwilliam, and about 20 couple of hounds were duly received in October of that year. The hunt was accordingly resuscitated, its affairs being managed by a committee consisting of Messrs. A. T. Crawford, H. Cleveland, T. Taylor and others. These hounds nearly all died in the early part of 1871; and Bombay remained without a pack until 1873, when a fresh lot were imported and kennelled at Love Grove under the charge of a European whipper-in called Philson. The mastership of this pack was held by Mr. N. Symons, Mr. G. K. Remington and Mr. Cecil Gray in succession. A fresh lot of hounds was annually imported and hunting was regularly carried on over the southern portion of Salsette, until 1890, when, in consequence of a meeting held in December 1889, the present Jackal Club, with its headquarters at Santa Cruz in Salsette, was established.

Since that date the Bombay Hunt has continued to hunt regularly over Salsette island, importing about October in each year 30 couple of English foxhounds, which are usually sold in batches at the close of each season (March) to other hunt committees or private persons in India.² In 1901 the hounds were moved from Bandora to new kennels at Santa Cruz. Owing to the steady northward expansion of the city, and the colonization of much that was open country but a few years ago, it is probable that the Bombay Hunt will be forced to leave the Salsette country and seek its sport in more distant parts of the Thana District. At the close of each season the Jackal Club holds a point-to-point race meeting which constitutes one of the last social fixtures of the Bombay cold weather. The affairs of the hunt are managed by a Committee and Honorary Secretary, elected annually by the subscribers.

¹ Records of the Bombay Hunt.

² The Bombay climate proves extremely trying to imported hounds, and in spite of excellent management, the Bombay Hunt has on more than one occasion had to record considerable mortality among its hounds. Since 1892-93 the office of M.F.H. has been

tion. The collections are limited to the Oriental region. The Society now consists of more than 1,300 members. In 1903 the Bombay Government agreed to contribute an annual sum of Rs. 2,500, which was increased in 1907 to Rs. 5,000, to permit of the Society engaging a trained assistant from Europe to superintend the museum.

Bombay Observatory (Colaba).—The observatory is located at the extreme end of Colaba, which runs about three miles south-west from the Fort and separates the harbour from Back Bay. The mean level of the observatory compound is 32 feet above the mean level of the sea. The nearest elevated ground is Malabar hill, lying north-north-westwards at a distance of about 5 miles on the opposite side of the bay, while that which subtends the largest vertical angle (but less than $1^{\circ} 7'$) as seen from the observatory is the southern hill of the island of Karanja, situated east-south-east at a distance of about 8 miles across the harbour. The peculiar situation of the observatory, surrounded as it is by sea, has a remarkably regulating effect upon the oscillations of the meteorological and climatic factors; and as regards wind, since the average gradient from Bombay to the Western Ghats is a little more than 1 in 100, its peculiar situation must influence but little the winds that reach Bombay from over the sea, which is the prevalent direction and those blowing from landward. The observatory is built upon the red sandy soil which characterises the neighbouring hills and through which the basaltic trap of Bombay crops up at intervals. The exact geographical position of the observatory is— $18^{\circ} 53' 45''$ N., $72^{\circ} 48' 56''$ E.

The important services rendered to the Indian Marine by the purely astronomical observatory of Madras induced the Honourable East India Company in 1822 to establish another observatory at Bombay. The site, the present one, was enclosed in 1823. The building was erected in 1826 by Mr. Curwin, the first Astronomer in charge. For a period of nine years, work does not appear to have been carried on systematically, as no details of the instruments used or of the work done can be traced. It is however recorded that once during the period all the instruments

History.

were sent back to England, as in the Astronomer's opinion they were found to give very unsatisfactory results. In 1835 the observatory was placed under the charge of Mr. Orlebar, who was also Professor of Astronomy at the Elphinstone College. The transit instrument was installed in 1840 along with a sidereal clock and two mean time clocks [all of which are in order and in use up to the present date] for the purpose of giving time to the shipping in the harbour and facilitating the rating of chronometers of private ships and ships of the R. I. Marine and the Royal Navy—work which still forms a part of the routine. Time signals were first communicated to the harbour by a ball service at Bombay Castle, for which an electric clock communicating with the Castle clock was specially installed, the observatory clock keeping the latter under control by electric currents. The extension northwards of the harbour later on necessitated an additional ball service and clock, which were installed at the Prince's Dock in 1891. Time signals were given formerly at both places at local times, but at present the balls are dropped at 8-30 A.M., Standard Time, at the Prince's Dock, and at 2 P.M. at the Castle every week day throughout the year. A new transit instrument, a new sidereal clock, two Riefler sidereal clocks, and a chronograph for facilitating star observations were added to the equipment between 1897 and 1909.

No meteorological or magnetical observations taken before 1841 are on record. On the recommendation of the Royal Society, however, systematic observations began in that year and the observatory was associated in the prosecution of research in meteorology and magnetism (besides continuing its astronomical work) with the colonial observatories of Toronto, Hobarton, St. Helena, Singapore, the Cape of Good Hope, and with the Indian observatories at Simla and Madras. From this year the active life of the observatory may be said to have commenced. In 1842, Mr. Orlebar, the Professor of Astronomy at the Elphinstone College, was succeeded by Dr. Buist, but the appointment of Astronomer at the observatory was subsequently held by officers of Her Majesty's Navy, stationed at Bombay. This ar-

rangement continued till 1864, during which period continuous records of astronomical, magnetical and meteorological observations were secured. But the work was not wholly satisfactory ; and the generally defective condition of the equipment of the observatory resulted in the appointment by Government of a committee of inquiry which, after a full investigation, recommended that (1) a full equipment comprising the latest type of recording instruments should be procured, and (2) a full-time and fully-qualified officer should be appointed as Director. These recommendations were at once acted upon, and Mr. C. Chambers was selected as the first Director in 1865. The change thus initiated has more than fulfilled the anticipations which were then formed regarding the utility of the institution, which now claims to be recognized as a first-class institution of well-established reputation in the scientific world. Both the magnetical and meteorological branches were, as recommended, fully equipped with photographic and mechanically self-recording instruments and with other auxiliary instruments for eye observations. The activity of the observatory under Mr. Chambers' régime is apparent from the published papers and volumes of the observatory for the years 1865 to 1894, which contain valuable contributions to the sciences of meteorology and magnetism. On the death of Mr. Chambers in February 1896, Mr. N. A. F. Moos, Professor of Physics at the Elphinstone College, was selected by Government to fill the vacancy, and the institution has since been under his direction. During this period, the instruments in the astronomical, magnetical and meteorological departments have been adequately supplemented from time to time by new ones in keeping with the advance of science. In 1898 the observatory was selected by the Government of India as one of the stations for the prosecution of inquiry in the science of seismology in connection with the international scheme initiated by the British Association for the advancement of science. Instruments for recording earthquakes have been installed since, and the work of observation and investigation in this branch of science has been added to the regular daily routine work. The publication of volumes giving the observations and investigations

in the sciences of magnetism, meteorology and seismology has been continued to the present date. Since 1899 the observatory has been under the direct control of the Government of India.

The introduction of electric tramways in all the larger cities of the world has affected almost all important observatories, vitiating their magnetic observations and compelling the removal of at least that part of the work to protected sites in the neighbourhood, safe from the disturbing effects of the electric currents. Bombay has not escaped the fate of other observatories. Fortunately, however, means were taken in time to preserve the continuity of the Bombay record. A magnetic branch of the observatory was erected on a suitable site sufficiently far away from Bombay to be beyond the vitiating effects of electric traction and yet near enough to show almost similar magnetic conditions. The site, which was finally chosen in 1902, is at Alibag on the coast of the mainland, about 18 miles south-east of Bombay. The observatory buildings were ready in January 1904, and were equipped with a full set of new magnetic instruments ordered out from England. The work of the duplicate series—that of comparison of the Colaba magnetic record with that of the new site at Alibag—commenced in March 1904, and has given sufficient data to link up the Alibag series with that of Colaba, and to allow of the magnetic work at the latter station, which was stopped in March 1906, being practically carried on as a continuous series at Alibag.

The appliances and powers of the observatories at Colaba and Alibag are directed first to the prosecution of enquiries into the sciences of terrestrial magnetism, meteorology and seismology; secondly to the publication of recorded facts and observations, their reduction and discussion, and to the distribution of such publications amongst the learned societies and men of science in all parts of the world; and thirdly to astronomical observations for the purposes of time keeping, and to the signalling of time for the purposes of navigation. For these purposes, the observatories are equipped with various magnetical, meteorological and seismological instruments installed in separate

buildings, specially constructed for their accommodation.

The main observatory buildings at Colaba are located on the top of a small mound sloping somewhat abruptly on its eastern side. The centre of the main building is occupied by a tower, surmounted by a wooden dome on which are mounted the anemometers and the receiver of the Callendar's sunshine recorder, at a height of 50 feet from the ground. On the second and first floors of this tower the recording parts of the Robinson Beckley's anemometer, of the Dines' pressure tube anemometer and of the Callendar's sunshine recorder have been installed. In the astronomical observatory the two transit instruments and two sidereal clocks are mounted on isolated stone pillars, while a small room to the north contains the collimator meridian marks similarly mounted. There are also a chronograph, two mean time clocks and an electrical clock for controlling the harbour clock by electrical currents, with galvanometers in circuit for noting the regular working of the connections and for receiving at the observatory return signals of the exact instant of the dropping of the time-balls both at the Prince's Dock and at the Castle. The Government store of chronometers for the Royal Navy and Royal Indian Marine is also kept here.

A large room to the west of the astronomical observatory is used as a computing room, the western end of the room being partitioned off and fitted up as a photographic operating room. The buildings for the accommodation of other magnetical, meteorological, and seismological instruments lie to the north of this main building. These consist of : (1) the underground room containing the horizontal force magnetograph, the declination magnetograph, the vertical force magnetographs Nos. 1 and 2, the barograph, the Richard thermograph, Riefler's sidereal clock, barometer No. 48 and a seismograph for recording vertical movements ; (2) the magnetometer office and the electrometer tower, the first of which contains the horizontal force magnetometer, the declination magnetometer, the declination transit instrument and Newman's standard barometer No. 58 ; (3)

three small rooms for the accommodation of (a) the Milne's seismograph (with 3 thermometers), (b) the Colaba seismographs Nos. 1 and 2, and a sensitive level, and (c) seismograph the Omori-Ewing; (4) the thermograph (louvre) shed containing the photographic dry and wet bulb standard thermometers and the recording apparatus, two standard thermometers for eye-observations and for standardising the thermograph curves, and the photographically registering pluviograph apparatus, the receiving funnel of which is freely exposed on the top of the shed; (5) an open space to the west of the thermograph shed containing the Newman's and Symons' rain gauges and two surface ground thermometers; (6) an old thermometer shed containing the 5 ground thermometers and a cage for the maximum and minimum (air and wet) thermometers; and (7) the library room (originally used as a lecture room and subsequently as the meteorological office) to the south of which in an open space are placed the solar and the nocturnal radiation thermometers. To the north and completely separated from these are the quarters of the assistants and the observer. The Director's bungalow is connected with the main building known as the astronomical observatory.

The routine operations of the observatory thus consist in maintaining in continuous action the autographic instruments (magnetical, meteorological and seismological); in taking eye observations five times a day of these instruments; in reducing the data thus secured and in putting them into the proper form for publication and investigations; in supplying weather and other reports to several offices and men of science, and in supplying the requisite information on magnetalical, meteorological, seismological and other allied questions to Government officers and others. In the astronomical department the observations of the stars or the sun are made with sufficient frequency for the correct rating of Government chronometers of the Royal Indian Marine and the Royal Navy, and for directing the falls of the time signal balls on the towers at the Castle and Prince's Dock. Since 1909 magnetic observation has been wholly carried out at the branch observatory in Alibag.

The following is a complete list of the instruments in the observatory and shows the dates on which the records obtained from each of them were commenced :—

No.	Name of Instrument.	Year in which first used.	Remarks.
METEOROLOGICAL.			
1	Barograph and Thermo- meter.	1871	Photographic Register, Hourly tabulation.
2	Photographic Air Ther- mometer.	1871	Do. do.
3	Photographic Wet-bulb Thermometer.	1871	Do. do.
4	Pluviograph	1875	Do. do.
5	Robinson Beckley's Ane- mograph.	1867	Velocity and Direction, writes mechanically Hourly tabulations.
6	Robinson Beckley's Ane- mograph.	1866	Do. do.
7	Dines' Pressure Tube Anemometer.	1897	Velocity, single gusts, writes mechanically Hourly tabulations.
8	Richard Frere's Baro- graph.	1897	Writes mechanically.
9	Richard Frere's Thermo- graph and a Thermo- meter.	1903	Writes mechanically (in the Magnetograph room).
10	Callendar's Sunshine Recorder.	1906	Writes mechanically.
11	Barometer No. 58 and Attached Thermome- ter.	1842	Eye observations 5 times a day since 1873; Hourly observations before that time.
12	Barometer No. 48 and Attached Thermome- ter.	1847	Do. do.
13	Standard Air Thermo- meter.	1847	Do. do.
14	Standard Wet Thermo- meter.	1847	Do. do.
15	Maximum Air Thermo- meter.	1867	Self-registering, twice a day.
16	Minimum Air Thermo- meter.	1865	Do. do.
17	Minimum Wet Thermo- meter.	1867	Do. do.
18	A pair of Maximum and Minimum Thermo- meters.	1871	Self-registering, observed once a day (placed in Mag- netograph-room.)
19	A pair of Maximum and Minimum Thermo- meters.	1902	Self-registering, observed once a day (placed in the Tromograph room.)
20	Two Air Thermometers and one Wet Thermo- meter.	1898	Observed five times a day (placed in Milnes' Seismo- graph room.)

No.	Name of Instruments.	Year in which first used.	Remarks.
	MAGNETICAL— <i>contd.</i>		
42	Declination Magnetograph and Vacuum Gauge.	1870	Photographic Register, Hourly Tabulations and Eye Observations five times a day.
43	Vertical Force Magnetograph No. 1, Thermometer and Vacuum Gauge.	1870	Do. do.
44	Vertical Force Magnetograph No. 2, Thermometer and Vacuum Gauge.	1893	Do. do.
	<i>All the Magnetical Instruments at Colaba are to be eventually transferred to Alibag.</i>		
	SEISMOLOGICAL.		
45	Milne's Seismograph ...	1898	Photographic Register, Eye observations five times a day.
46	Seismograph for recording vertical movements.	1902	Photographic Register of Balance and Float.
47	Colaba Seismograph No. 1.	1900	Writes mechanically.
48	Colaba Seismograph No. 2.	1900	Do.
49	Omori-Ewing Seismograph.	1908	Do.
	ASTRONOMICAL.		
50	Transit Telescope ...	1840	Observations of the Sun
51	New Transit Telescope.	1900	{ or Stars three times a week generally.
52	Collimation Meridian Mark.	1840	
53	Chronograph ...	1897	
54	Old Mercurial Pendulum Clock.	1840	
55	Sidereal Clock ...	1900	
56	Mean Time Clock ...	1840	
57	Electric Clock ...	1872	Compared with the Sidereal Clock three times a day.
58	Two Riefler Sidereal Clocks. <i>At Alibag.</i>	1908	
59	New Sidereal Clock ...	1840	
60	Magnetometer No. 7 ...	1902	Intensity and Declination observed once a week.
61	Magnetometer No. 3 ...	1903	Do.
62	Magnetometer No. 137...	1898	Observed once a week.

No.	Name of Instruments.	Year in which first used.	Remarks.
MAGNETICAL—contd.			
63	Dip Circle No. 160 ..	1903	Observed thrice a week.
64	Schulze's Inductor with Galvanometer.	1906	Observed once a week.
65	Horizontal Force Magnetograph and Thermometer.	1904	Photographic Register, Hourly tabulations and Eye Observations five times a day.
66	Declination Magnetograph.	1904	Do. do.
67	Vertical Force Magnetograph and Thermometer.	1904	Do. do.
68	Declination Magnetometer.	1904	Eye observations five times a day.
69	Horizontal Force Magnetometer and Thermometer.	1906	Do. do.
70	Vertical Force Magnetometer and Thermometer.	1906	Do. do.
71	Declination Transit ...	1904	Occasional adjustment.
72	Transit	1905	Observations of the Sun or Stars three times a week generally.
73	Collimation Meridian Mark.	1905	
74	Sidereal Chronometer...	1905	
75	Richard Frere's Thermograph and a Thermometer.	1903	In the Magnetograph room, observed twice a day.
76	Thermometer in Magnetometer room.	1904	Observed five times a day.
77	Theodolite	1903	

Bombay Presidency Association.—The Bombay Presidency Association was founded in 1885 by the late Messrs. (afterwards Justices) Badruddin Tyabji and Kashinath T. Telang and Mr. (now Sir) Pherozesha M. Mehta, on the ruins of the Bombay Association which had been founded in 1851, and of the Bombay Branch of the East India Association, founded by Mr. Dadabhai Naoroji in London in 1867. A large number of native gentlemen joined the new association, among the more prominent being Sir Jamsetji Jijibhoy (3rd Baronet), Sir Dinsa Petit (1st Baronet), Mr. J. N. Tata, Sir Mangaldas Nathubhai, Messrs. Varjivandas and Natottam Madhavdas, Raghunath N.

Khote and Nakhoda Mahomed Ali Rogay. During the twenty-three years of its existence the Association has made numerous representations to the governing authorities on local, provincial and imperial matters; it has also on important occasions called public meetings, as for example one in the Town Hall for the purpose of raising a memorial to the late Professor Henry Fawcett, and another in its own rooms to elect Mr. (now Sir) N. G. Chandavarkar as a delegate to London on the occasion of the general elections of 1885 to submit Indian public opinion to the British electors. In 1897 the Association was invited by the Government of India to select a representative to give evidence before the Royal Commission on Indian Expenditure; and it has also been privileged to select, in its turn, a Director for the London Imperial Institute. The Association has a council of management with three honorary secretaries and is presided over by a chairman. It possesses an important library. On more than one occasion the Association has had the honour of receiving in its room distinguished members of the British Parliament, among them being Lord Reay, Lord Rosebery and the Right Honourable Mr Bryce.

Bombay Races.—The earliest reference to horse racing in Bombay is contained in the following extract from the *Bombay Courier* of the 25th November, 1797:—“A plan having been set on foot for establishing races at this Presidency, which has hitherto met with very general encouragement, this is to give notice that in the course of next month a race will be run for a purse of 50 pounds. After the race there will be breakfast for the ladies and gentlemen at the race stand and a ball and supper in the evening.” By the 21st December 1797, sufficient funds had been subscribed by “the gentlemen of the settlement” to allow of two plates being run, the first for colts not above 5 years old and the second for aged horse, and the 10th January was fixed as the first day of the two days’ meeting. Instructions were issued to the public that the first heat would be run at 7 a.m., and that breakfast would be served in tents “on the high ground opposite Colonel Jones’ house.”¹ The meeting proved

¹ *Bombay Courier*, December 28th, 1797.

highly successful, among those who played a prominent part being one Captain Hall of the *Sullivans*, "who, as a friend to the Turf, saluted the last day's race with fifteen guns."¹ The ground upon which these races were run was with the sanction of the Bombay Government purchased by the stewards and managers and the balance of the funds subscribed for the first races mentioned above was devoted to improving the course.² By 1800 the Bombay Turf Club had been established, and in that year presented a prize of one hundred gold mohurs, to be added to a sweepstake of Rs. 100 apiece, with a view to encourage the breeding of horses by gentlemen in Bombay and its dependencies.

In 1839 the races had expanded into a five days' meeting held at what is now the Byenlla Club, and organised by "the friends of the turf" who arranged to have a dinner and a selling lottery in the club on the evening of the opening day. According to Mrs. Postans the races took place annually in January and were well patronised. The course was kept in good order, and the leading jockey, 'the Chiffney of Western India,' was a Muhammadan called Safruddin, who "might, when attired in his racing-gear, be mistaken for an English Jockey."

About 1880 the race-course was moved to the present site at Mahalakshmi, which is now held on lease from the City Improvement Trust. Of recent years racing has become very popular with all classes, the chief supporters being native and Arab gentlemen, some of whom own valuable racing studs. During the cold weather five or six hundred horses may be seen training on the course. Bombay is the head-quarters of Arab racing; and of late years many Australian and English race-horses have been imported. The Bombay Races take place every February; but extra meetings are held every Saturday and sometimes on Wednesday and holidays during the cold weather. During the cold weather of 1909 nearly 2½ lakhs were given away as prize money.

¹ *Bombay Courier*, 13th January 1798.

² The land is described in the Collector's Records as "Salt Batty." The Collector's order transferring the land to the Stewards is dated 23rd January 1798.



BYCULLA CLUB AND RACE-COURSE PRIOR TO 1869.

Bombay Society for the Prevention of Cruelty to Animals :—In December 1874 the Bombay Society for the Prevention of Cruelty to Animals was founded by Mr. Cleveland, General Ballard, the Rev. Dr. Wilson, Mr. (now Sir) William Lee-Warner and other residents of Bombay, with a view to check the improper treatment of animals in the Bombay Presidency.¹ The Honourable Mr. Justice Bayley was first president of the Society. The Society employ paid officials to warn the public and to institute prosecutions whenever necessary. More than 14,000 animals were taken before the magistrates during 1908-09 and a large number are annually sent for treatment to the Bai Sakarbai Dinshaw Petit Hospital for Animals, which was opened in 1884 and is connected with the present Bombay Veterinary College by an agreement between Government and the Trustees of the Hospital. The Society has branches at Karachi and Ahmadabad.

Byculla Club.—The movement to found the Byculla Club probably arose from the existence of the Sans Souci Club, founded in 1785 by Mr. Torrie, Senior Member of Council, and of the Highland Society which came into existence on May 2nd, 1821, under the presidency of the Hon. Mountstuart Elphinstone, Governor of Bombay. Neither of these clubs possessed property or permanent premises. In 1832 a preliminary meeting for the foundation of a permanent club and premises was held; and after considerable difficulty and delay had been experienced in obtaining a site and building, a committee of management reported that the Grove at Mazagon, situated near the present Mazagon post office was suitable and could be rented for the purposes of the club for Rs. 225 per month. This proposal apparently failed to find favour, for in June 1833 the club, which had hitherto styled itself the Bombay Club, had established itself in the Byculla Assembly Room under the title of the Byculla Club. The Byculla Assembly Room had been open since the 1st January 1823, and formed part of the race-stand attached to the old race-

¹ Subsequently the Society's jurisdiction was limited to Bombay Island. Act XI of 1890 for the Prevention of Cruelty to Animals was introduced into Bombay by Government Notification of 31st August 1891.

course, which was then known as the Byculla Turf.¹ The original assembly-room is now the Club reading-room ; a second public room was added to it shortly after the foundation of the Club in 1833, and further additions were made in 1841.² In 1845 the billiard-room, hall and entrance were completed, and the accommodation of the Club was further enlarged in 1855 and 1864. The kiosk was erected at a cost of Rs. 1,000 in 1869, and a racquet court was built in 1874. Among the most noteworthy features of the Club in the present day are its gardens, which contain several rare plants and exotics. One of the earliest notices of the Byculla Club appears in the *Bombay Courier* of the 11th January 1839, to the effect that the Club entertained Chevalier Ventura, General of the army of Ranjit Singh, while the most recent notable function was the entertainment of Their Royal Highnesses the Prince and Princess of Wales at a ball on the 13th November 1905.

*Protestant,
St. Thomas'
Cathedral.*

Churches.—Prior to 1675, the English in Bombay possessed no church of any kind,³ and for more than forty years after that date the only place for divine worship was a room situated in the Castle and called the Fort Chapel.⁴ Sir George Oxinden interested himself in the question of providing a proper church ;⁵ in 1672

¹ The crest of the Club represents the Byculla Turf pavilion of 1814 and is reproduced from a picture on the wall of Bobbery Hall given as an illustration to the satire *Qui Illi* published in 1816. For early history of the Byculla Club see *Times of India*, February 17th, 1894. In 1812 Bombay had a Bachelors' Club.

² An illustration in Colonel Davidson's *Memoirs of a Long Life*, now framed and hung in the Club, shows the east front of the Assembly Rooms as it appeared in 1834. It will be noted that while the pillars on the ground-floor of the Assembly Room closely resemble the verandah pillars under the Club race-stand, in the verandah outside the Secretary's office double pillars in the style of the main porch have been substituted for the single pillars of the sketch. The upper storey has also been shaded by a verandah, and the tops of the windows have been altered from round Roman or Portuguese to flat Grecian. These changes were probably completed in the year 1845.

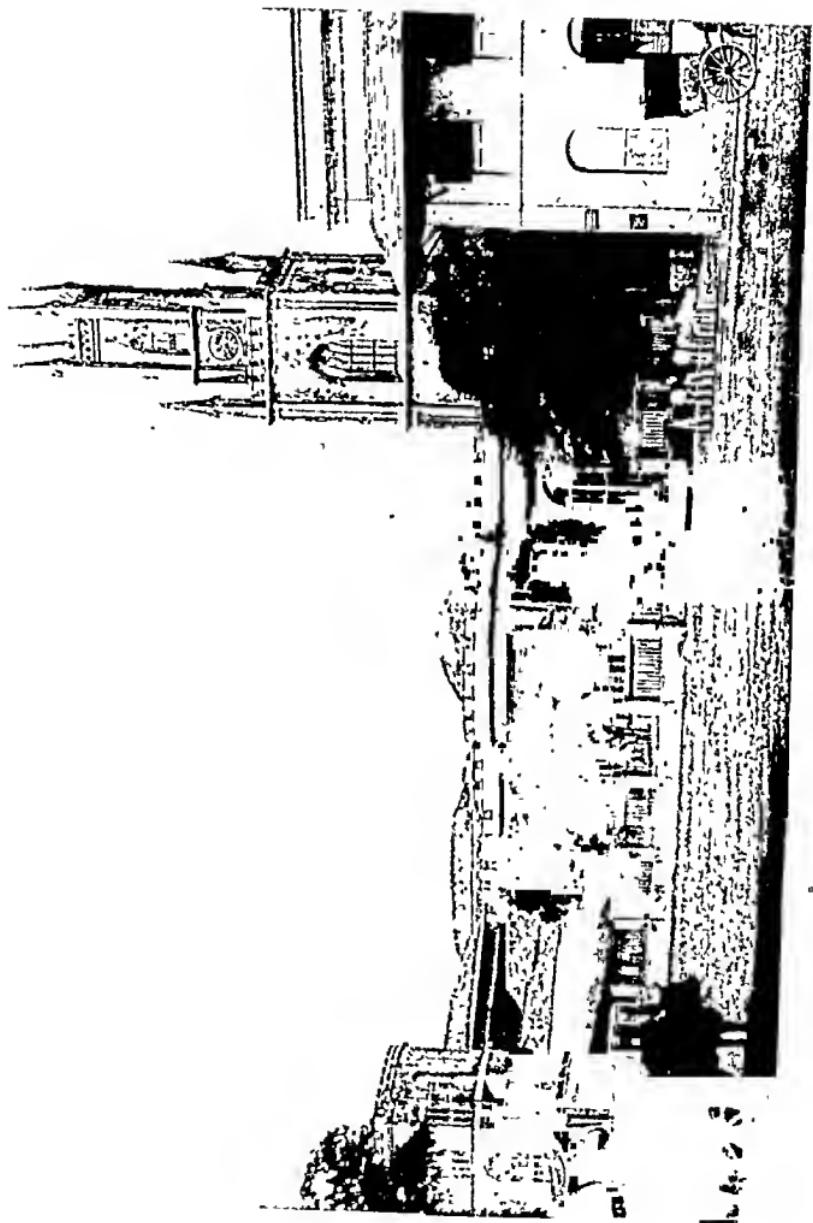
³ Fryer's *New Account of East India and Persia* :—"The English have neither church nor hospital, both of which are mightily desired."

⁴ Maclean's *Guide to Bombay*. Cobbe (*Account of the Bombay Church*) describes the chapel as "two upper rooms, beat into one."

⁵ Hamilton in his *New Account of the East Indies*, I. 187-188, writes :—"Notwithstanding the Company was at so much charge in building forts, they had no thoughts of building a church. Sir



THE CATHEDRAL & BOMBAY GREEN, 1864.



and again in 1674 Aungier wrote to the Court of Directors desiring "by God's assistance to erect a small church for public worship in the centre of the town;" and in 1674 a regular scheme for building a garrison-church was projected. The Council at Surat favoured the proposal, declaring that such an edifice was much needed, not only for the use of the English, but also that "natives and foreigners might be so impressed with feelings of reverence for our wholly reformed religion that happily they might wish to embrace it."¹ The plan of a building was submitted by the President at Surat for the Court's approval in 1676, it being designed to seat a thousand people, and "to be of a form proportionable to our usual churches in England, but plain and free from superfluous ornament." The expense, which was to be defrayed by voluntary contributions, was largely borne by the Company's servants, who "came forward freely and conscientiously, some offering one year's wages, some half a year's, and the least a quarter." It was hoped that the Company itself would make good the balance.

The collections amounted to Rs. 50,000, and an organ was provided, the funds being entrusted to the Chaplains of Bombay and Surat for the provision of building materials, pending the receipt of formal sanction from the Court of Directors. After much discussion, the present site (at the corner of Elphinstone Circle, then the Bombay Green) was chosen; ² the building

George Oxenden began to build a church, and charitable collections were gathered for that use. But when Sir George died (1669), piety grew sick and the building of churches was grown unfashionable. Indeed, it was a long while before the island had people enough to fill a chapel, that was in the Fort; for as fast as recruits came from Britain, they died in Bombay, which got the island a bad name."

¹ Letter from President Aungier and the Bombay Council to the Court, dated June 14, 1672; and President Aungier's Report, 1673-74.

² Letter from Surat Council to Bombay, January 11th, 1676. Bombay Town and Island Materials, Part III, 580. A general form of prayer was introduced in 1698.

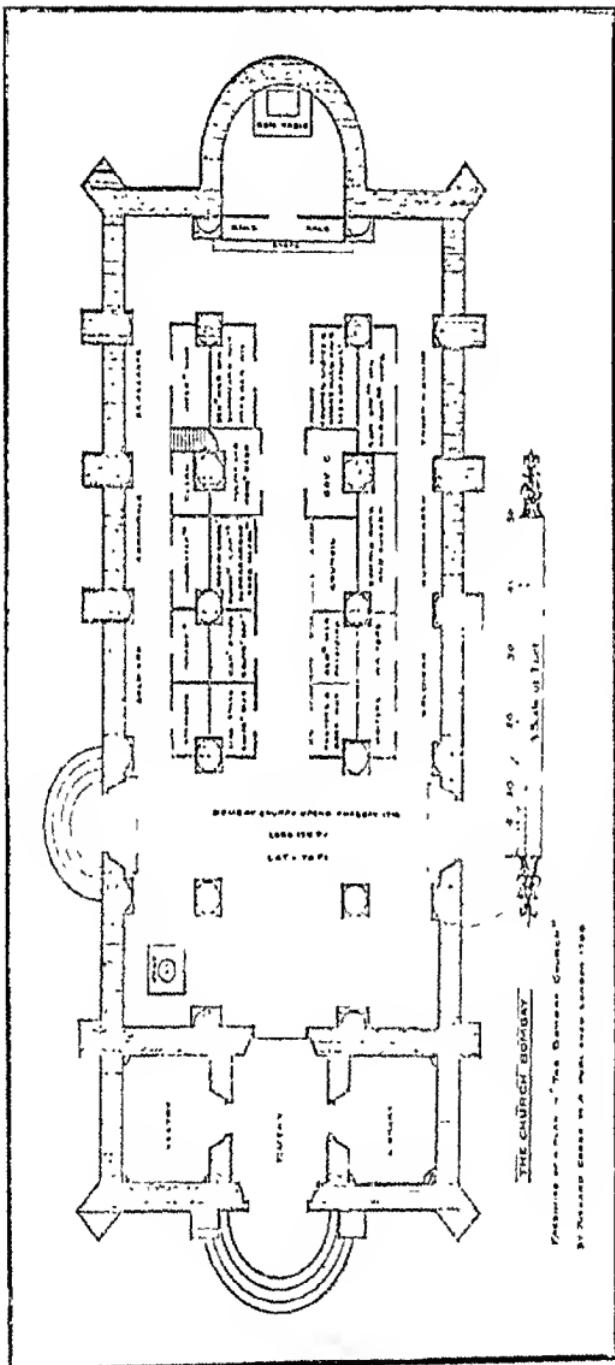
³ In their letter of 17th January, 1676, the Surat Council wrote to the Court:—"The place is not yet fully resolved on. Some propose the church should be erected on Mendham's Point, which is our usual burying-ground, and that was proper enough as to ourselves. But it will not answer our main designs of inviting the natives to repair thereto and observe the gravity and purity

was commenced; and at the date of Sir John Child's governorship (1681-1690), the walls had been raised to a height of fifteen feet.¹ Then for some reason the work suddenly languished; the funds mysteriously disappeared; and the bare walls remained till a generation later a gathering-place for animals—an object of derision to the natives and a reproach to the English in Bombay.

But the scandal was removed on the arrival in Bombay on the 21st September, 1714, of the Reverend Richard Cobbe, Chaplain to the East India Company. On June 19th, 1715, being the first Sunday after Trinity, he

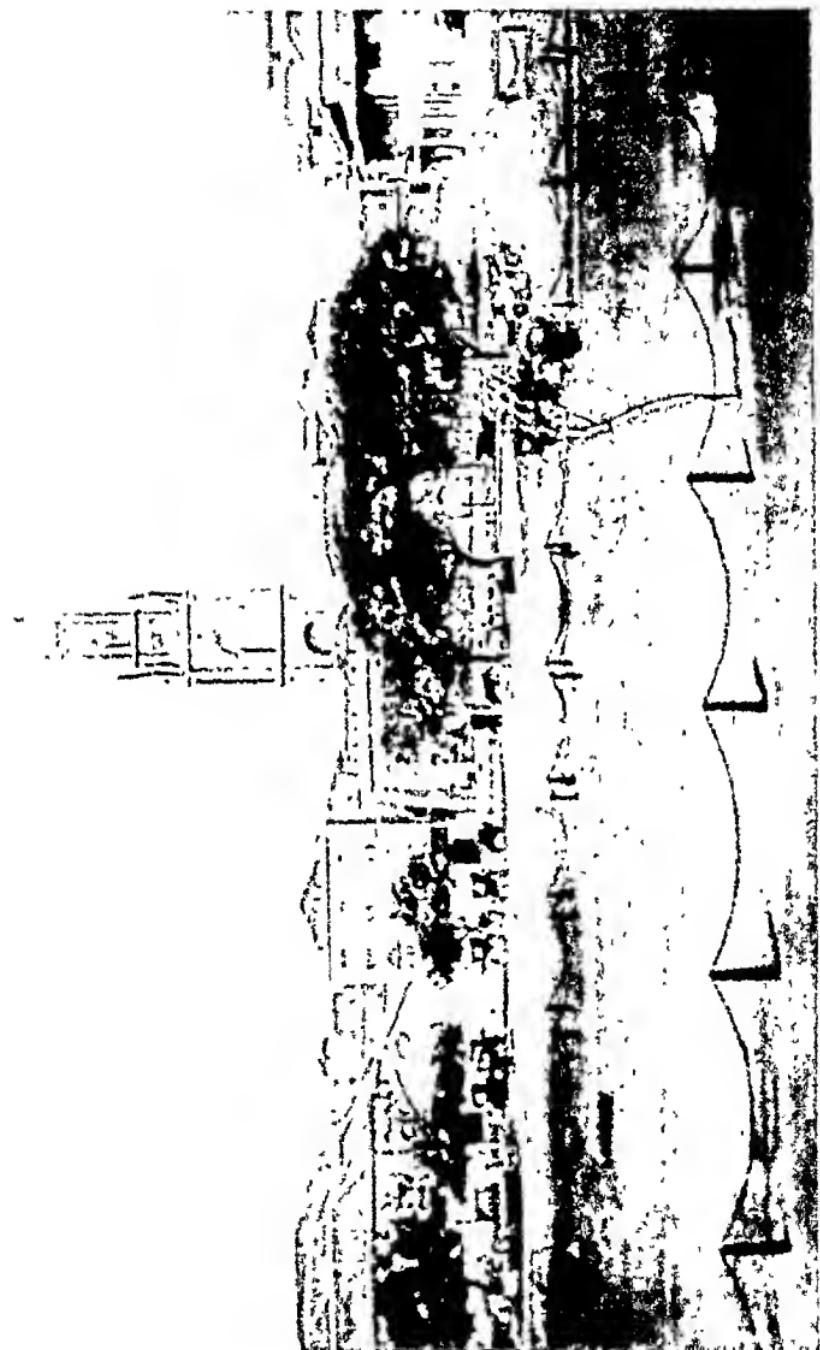
of our devotions. For that place is quite out of the way of course, and will seem wholly appropriated to the English. Wherefore others think it may be as convenient to build the church near the present town or between it, and the place designed for the English and Europeans to inhabit in, and to be adjoining to the high road leading to the great street or bazar of the present town, to the end that being open and free to all to enter without scruple, some may be persuaded at first out of curiosity to visit it and see our way of devotion therein, etc."—Bombay Town and Island Materials, Part III, 580.

¹ Hamilton (New Account of East Indies, I, 18-188) writes:—"There were reckoned above £5,000 had been gathered towards building the church, but Sir John Child, when he came to reign in Bombay, converted the money to his own use, and never more was heard of it. The walls were built by his predecessor to five yards high, and so it continued till the year 1715. Then Mr. Boone came to the chair, who set about building it, and in five years' time finished it by his own benevolence and other gentlemen who by his persuasions were brought in to contribute. The Company also contributed something towards that pious end." Hamilton's accusation of embezzlement against Sir John Child was never refuted and was never definitely corroborated. Cobbe in his Account of the Church remarks that "the late wars or collusion or fraud of all or any of the Trustees" had prevented the further progress of the work. He described the walls as half-finished and ruinous. In his book (printed 1766) appears a letter to him from George Bourchier to the following effect:—"I wish you better success than your predecessor who built little, raised and destroyed abundance of money to no purpose; he had furnished a stately organ, which I saw in the Fort. What is become of it God knows." This organ was "broken and useless" in Cobbe's time. It is possible that the improvement of the Fort Chapel by Sir John Wybunor may have obtained the immediate need for a church and indeed lack of care in the control of the funds. A Herting general letter to the Company, dated 29th December 1686, runs as follows:—"The ten Deputy-Governor, Sir John Wybunor, has made the house in the Fort much more commodious than ever it was, having fitted up a very convenient chapel out of two rooms situated in the middle of the bazaar, where there is room enough for four times the number of people that will serve this Island."—Bombay Town and Island Materials, Part III, ch.



ORIGINAL PLAN OF ST. THOMAS' CATHEDRAL.

THE CHURCH BOUNDARY
Presented to the City of The Hague
by the Royal Engineers in a map over twenty years



THE OLIGAY CREEK. 1854.

preached a great sermon,¹ exhorting the English community to "wipe away the reproach of being godless in the sight of the heathens," and to complete the ruinous edifice. The appeal fell not upon deaf ears. Money and benefactions were readily offered²; the foundation-stone of a new edifice was laid by the Deputy-Governor, Mr. Stephen Strutt, on the 18th November, 1715, and on Christmas Day, 1718, the Church was formally opened by order of the Governor, Charles Boone.³ When first completed, it was described as "suitable in some measure to the dignity of our Royal Settlement, and big enough for a

¹ The text of the sermon was 2, Samuel, vii. 2:—"See now I dwell in a house of cedar, but the Ark of God dwelleth within curtains."

² Cobbe (Account of the Church) writes:—"After Sermon in the morning I waited on the Governor, the Honourable William Aislabie, according to custom, at his lodgings in the Fort, before dinner, who was pleased to address me very friendly in these words:—'Well, Doctor, you have been very zealous for the church this morning.' 'Please, your Honour, I think there was occasion enough for it, and I hope without offence!' 'Well then, if we must have a church, we will have a church! Do you see and get a book made, and see what everyone will contribute towards it, and I will do first.' This was accordingly done, leaving a blank for the Company's subscription, which was afterwards filled up with ten thousand rupces."

Among those who contributed were "John Barnes (*alias* a shipwreck man), Rs. 40, Isaac King *alias* Pereira (a converted Jew), Rs. 6, a fine upon Bundarees at Worlee, Rs. 18, and a fine inflicted upon Joseph Hornall for a misdecanour, given by the Governor's order; Cornelius Sodington (for my wife when I have one), Rs. 20; Cumsha (a Chinaman), Rs. 150, and Chunqua (a Chinaman), Rs. 90."—Cobbe's Account.

Cobbe also wrote for subscriptions to the Council at Madras, who demurred on the grounds that "the structure was three times larger than was necessary, and the fabric appeared to be rather magnificent than useful." Cobbe replied:—"I am sorry to find your Christian zeal, so much spoken of in these foreign parts, so degenerate and confined as not to extend itself beyond the bounds of your own territories, but upon conditions."

³ Cobbe, writing to the Chief of Calicut and Tellicherry on the 10th January 1719 (Account of the Church), thus describes the opening:—"On Christmas Day 1718, the Governor and Council, attended by the free merchants, military and other inhabitants of the place, proceeding from the Fort in great order to the Church, and approaching the great door at the west end, were met by the Chaplain in his proper habit, and introduced repeating the 24th Psalm (Lift up your heads, O ye gates: even lift them up, ye everlasting doors) with the Gloria Patri. The Church was dressed with palm-branches and plantain-trees, the pillars were adorned with many wreathes of greens, and the double crosses over the arches looked like so many stars in the firmament. Service began as usual on Christmas-Day, but with this additional satisfaction, the making a new Christian the same day in the new

Cathedral,"¹ and as an illustration of the manners of that age, it may be mentioned that in order to keep the fabric

Church—a good omen doubtless of a future increase. The Governor, Mrs. Parker and Mrs. Crommelin, who stood gossips, came down to the font in time of Divine Service, where the child was baptized, according to order, by the name of Susanna. A whole crowd of black people stood round about, among them Ramaji and all his caste, who were so well pleased with the decency and regularity of the way of worship, that they stood it out the whole service. When the sermon from *Isiah LVI.*² was over, the Governor and Council and ladies repaired to the Vestry, where having drunk success to the new Church in a glass of sack, the whole Town returned to the Governor's lodgings within the Fort. Here was a splendid entertainment—wine, music and abundance of good cheer. After dinner the Governor began 'Church and King,' according to custom. In addition, upon this occasion, a compliment of twenty-one great guns was given from the Castle, which were answered by the European ships in the harbour; with several other healths, drinking and firing till almost four o'clock. Lest so good an opportunity should slip, by the Governor's leave, the Chaplain brought in the subscription book, and got above Rs. 2,400 to the Church, of which, for example's sake, the Governor launched out Rs. 1,000 himself."

¹ Cobbe (Account of the Church) writes:—"The Church is indeed a structure deservedly admired for its strength and beauty, neatness and uniformity, but more especially for its echo. The roof is arched with three regular arches of stone, supported by two rows of pillars and pilasters on each side, with a large semi-dome at the east end to receive the communion-table, like that of St. Paul's, London, ascending by three steps, and a rail to separate it from the body of the Church. Its situation is very commodious, in the midst of the inhabitants, within the town-wall, and at a due distance from the Castle; as to its extent, it is larger than either of the English Churches at Madras or Bengal, or any of the Portuguese Churches in Bombay."

Grose (Voyage to the East Indies) wrote in 1750:—"The only English Church at Bombay, and which is full sufficient for any possible congregation of them at it, is a building extremely neat, commodious and airy, being situate on what is called the Green.

Ives (Voyage from England to India) described it in 1754 as "a very handsome large edifice, and in comparison of those which are to be met with in the other settlements, it looks like one of our cathedrals."

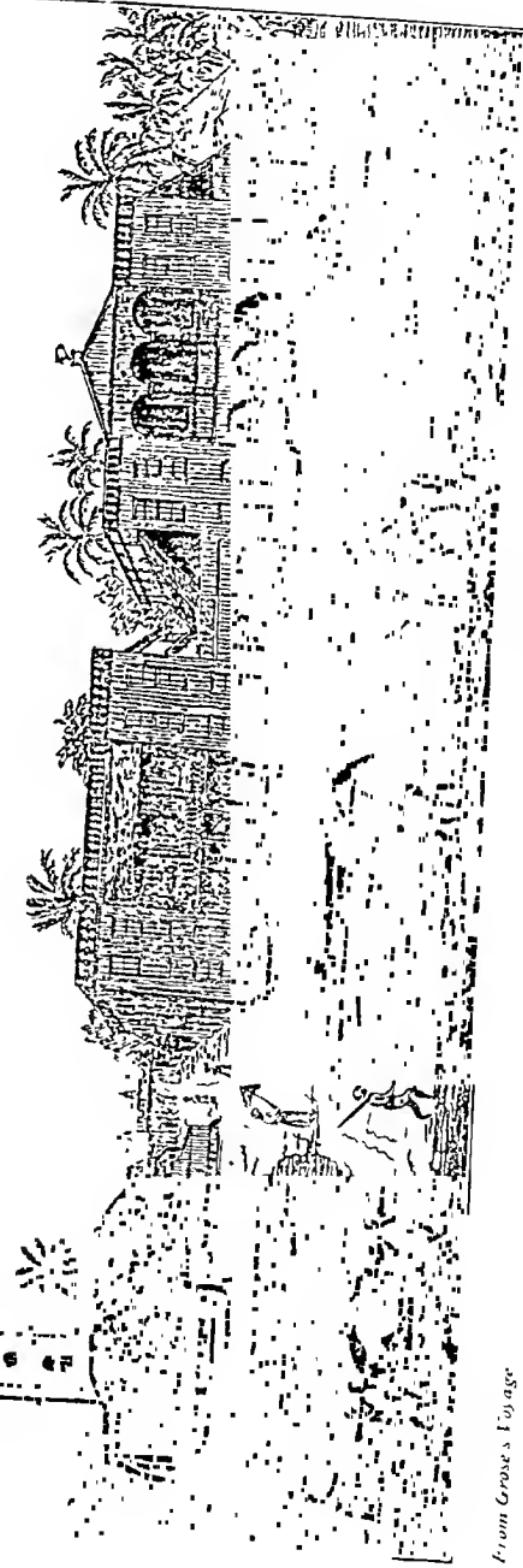
Forbes (Oriental Memoirs, I. 152) remarks that—"The only Protestant Church on the island stood near the centre of the town, a large and commodious building with a neat tower."

Mrs. Graham (Journal of a Residence in India) speaks of it in 1813 as "large, but neither well served nor attended." Bishop Heber (Journey through India) in 1829, Mrs. Elwood (Narrative of an Overland Journey to India) about 1830, and Mrs. Postans (Western India) in 1838, all refer to the Church in terms of admiration.

James Douglas (Bombay and Western India, II, 253) quotes an article to show that at the commencement of the nineteenth century the Church was floored with cow-dung and lighted with panes of the pearl oyster-shell instead of glass.

From Grose's Voyage

THE WEST SIDE OF BOMBAY GREEN IN 1750
(St Thomas Church and Church Gate in the distance)



in repair a duty of one-half per cent. was levied on all goods imported into Bombay.¹

In 1814 Bombay became an Archdeaconry of the See of Calcutta, the first Archdeacon being the Rev. G. Barnes, and on the 7th June 1816 the Church, which had previously been occasionally called St. James's, was consecrated by Dr. Middleton, the first Anglican Bishop in India, in the name of St. Thomas the Apostle. A generation later (1835), Bombay was raised to the dignity of a Bishopric, and on the arrival of the first Bishop, Dr. Carr, who was installed on the 21st February 1838, St. Thomas's Church was notified by Government to be the Cathedral Church of the See. To commemorate this event, the old belfry, which Cobbe had raised "in order for a sea-mark, as high as funds could tower it",² was replaced by the present tower at a cost of Rs. 16,000 ; and a clock was purchased by public subscription at a cost of 500 guineas.³ In 1863 Archdeacon W. K. Fletcher formulated a scheme for rebuilding the Cathedral, and a Committee was formed to carry out the work, which numbered among its mem-

¹ Maclean's Guide to Bombay, 229. A Parsonage House was bought by Government in 1738 and continued as such till 1801. The site lies about thirty yards south of the south-west corner of the Cathedral. The house was abandoned in 1801 because the clergyman was unable to sleep owing to the proximity of a Cotton Screw.

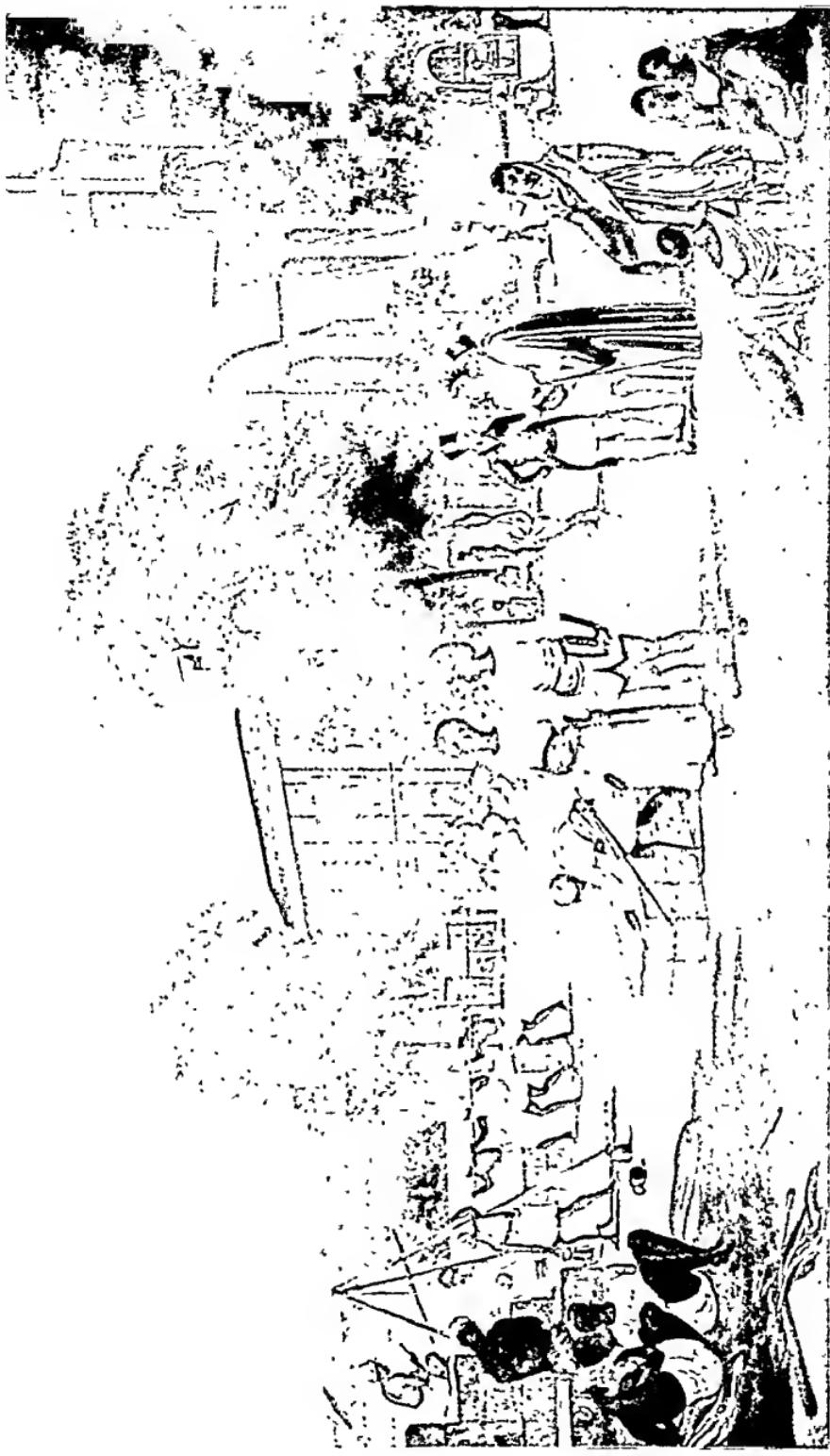
² Cobbe's Account of the Church (1766), 57-59. James Douglas (Bombay and Western India, II, 252) says:—"The original steeple ended in a kind of lantern, as we see in Grose's print. The upper portion of the present clock-tower dates only from about 1838. The bell of St. Thomas's half-way up the steeple was the gift of Governor Boone, and is a most interesting memorial. It was cast in Bombay, and a very fine bell it is. The inscription on it is now almost undecipherable, and cannot be read without a considerable craning of the neck. It runs:—LAUS DEO IN USUM ECCLES. ANGLII, BOMB., AN. DOM 1719. SINE CHARITATE FACTI SUMUS VELUT AES SONANS."

³ The Bombay Times of January 23rd, 1839, contains the following note:—"The new clock intended to be placed in the Cathedral tower has been shipped on board the *Thomas Coutts*. It is of the most perfect workmanship that Messrs. McCabe & Co. can produce, is made with four copper dial plates and double hands, and is constructed to strike the quarters; while the situation selected for it, the base of the upper tower of the beautiful turreted spire of the Cathedral, now nearly finished, will render it perfectly visible to the shipping in the harbour. The Cathedral is being modernised under the able supervision of the Superintending Engineer."

bers Mr. (now Sir George) Birdwood and Mr. (now Sir L. H.) Bayley, a former Judge of the High Court. The stone of the renovated cathedral was laid by the Governor, Mr. (afterwards Sir Bartle) Frere. Three years later Bombay passed through the ordeal of bankruptcy which followed upon the share mania, and the work of renovation was perforce brought to a close. The only portions of the scheme completed were the chancel, which was fitted up in its present condition during the episcopacy of Bishop Douglas, the fountain at the west entrance for the erection of which Sir Cowasji Jehangir Readymoney subscribed Rs. 7,000, and the organ-chamber in which stands the magnificent instrument built expressly for the Cathedral by Messrs. Bishop and Starr at a cost of Rs. 15,000.¹ On the 14th March 1906, public meeting was held and a committee was appointed to carry out further improvements, estimated at Rs. 52,400, and consisting chiefly in the restoration of the organ, the installation of electric light and fans, and the erection of new choir-stall and a Bishop's throne and pulpit.

The most interesting portions of the building are the tessellated pavement in the chancel, which was laid down in memory of Archdeacon Fletcher; the three upper clerestory windows erected to the memory of Michael Scott, a merchant, and five lancet windows erected by the Royal Engineers to the officers of that corps. The finest memorials are those erected to the Honourable Jonathan Duncan, Governor of Bombay (1795-1811); to Captain Hardinge, R. N., a younger brother of Lord Hardinge, who fell in the victorious naval engagement off the coast of Ceylon between the British ship *San Florenco* and the French frigate *La Pied Montaise*; to Stephen Babington, reviser of the judicial code, whose statue now stands in the Town Hall; and to Bishop Carr, whose effigy in marble, in full episcopal robes, repose in the southern transept. Other monuments of historical interest are those to Brigadier-General Carnac, who defeated the Shahzada in 1761; to John Watson, Superintendent of Marine, who was killed at the siege of Thana in 1774; to Admiral Maitland, to whom, when in command of

¹ Maclean's Guide to Bombay, 230.



Reproduced from Grindlays' Indian Series

VIEW OF BOMBAY GREEN 1811

The buildings shown are the Church (now St. Thomas's) and the counting-house of Messrs. Forbes and Company.

H. M. S. *Bellerophon*, Napoleon surrendered ; to Colonel Burton Barr, who won the battle of Kirkee ; and to Major Eldred Pottinger, the heroic defender of Herat. An attractive specimen of Bacon's sculpture is the medallion in memory of Mrs. Kirkpatrick on the wall.

In the muniment chest are preserved two silver chalices of considerable age. The first, which Mr. Douglas has styled "the oldest tangible memorial of our existence as an English settlement," was presented by Gerald Aungier to the Christian community of Bombay in 1675. It bears the following inscription :—“Hunc calicem eucharistæ sacram esse voluit Honorabilis Geraldus Aungierus, insulæ Bombaiæ Gubernator, ac pro rebus Honorabilis Anglorum Societatis Indies Orientalibus mercatorum agentium præses.” Of the other chalice no record whatever remains, nor can one hazard a conjecture as to how it came into the possession of the Cathedral. The following words are inscribed upon it :—“The gift of the Greenland merchants of the City of York, 1632.”¹

The representatives of several Bombay families are buried in the enclosure of the Cathedral, which was not regularly used till after the abandonment of Mendham's burying-ground in 1760 ; but the opening of the Sonapur cemetery in 1763 obviated the necessity for any general use of the Cathedral yard for this purpose. Among those whose remains are buried inside the Cathedral one may mention the Reverend N. Wade ; the wife of Sir Richard Bouchier, who was Governor of Bombay from 1750 to 1760, the Honorable Jonathan Duncan, Lady West, wife of a former Chief Justice, Sir W. Syers, the first Recorder of Bombay, Sir Robert Oliver, the first Commander-in-Chief of the Indian Navy, Sir C. H. Chambers, Sir James Dewar, and Sir David Pollock, Judges of the High Court, Admiral Inglefield, and General Kinnersly.

Among the other better known Churches of Bombay is St. Andrew's Church, sometimes called the Scotch Kirk, which stands at the corner of Apollo street. In 1813 the East India Company resolved to appoint a minister of the Church of Scotland at each of the

¹ See *Bombay and Western India* by J. Douglas, II, 252.

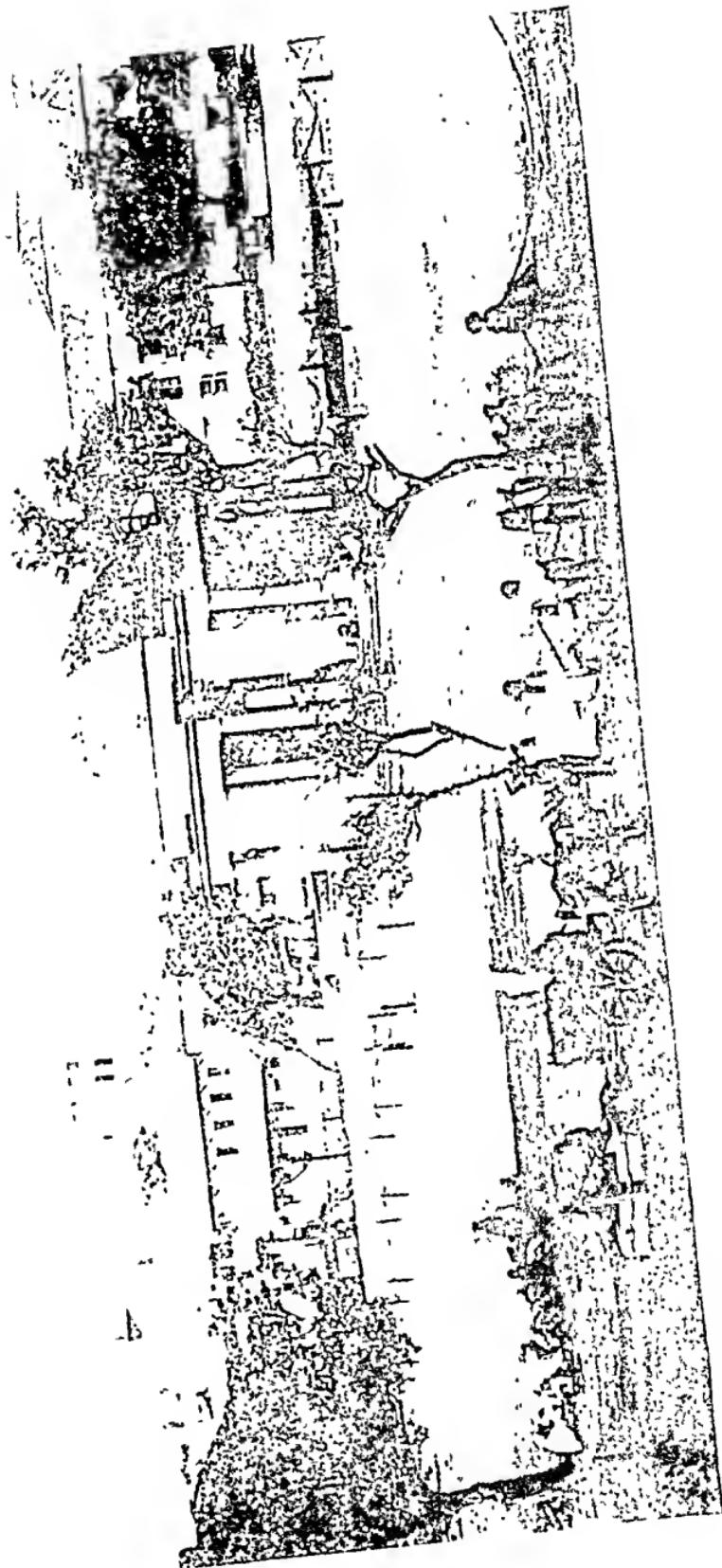
*Other Pro-
t e s t a n t
Churches.*

Presidency towns in India and directed that suitable places of worship should be erected. Two years later Mr. Clow, the first Church of Scotland Chaplain in Bombay, reached India, and in 1816 the foundations of St. Andrew's Church were laid between what was then the Court House and the Ramparts. In April 1819, the Church was opened for public worship, and in 1823 the spire was added.¹ The organ, which was one of the first organs used in the worship of the Reformed Church of Scotland, was given by the congregation in 1867 at a cost of Rs. 4,800. The Church has recently been greatly improved by the introduction of electric light and fans and the provision of a new roof.

Holy Trinity Church on the Esplanade, which was opened for worship in 1890, belongs to the Society for the Propagation of the Gospel, which commenced work in Bombay in 1836, and built a chapel and school-house at Sonapur in the years 1840 and 1842 respectively. In 1883 the chapel and the school, which was then known as the Indo-British Institution, were moved to a plot adjoining the School of Art and here in 1887 the foundation-stone of the church was laid.² The Church of St. John the Evangelist at Colaba was built in 1857 in memory of the officers, non-commissioned officers and private soldiers who fell by sickness or by the sword in the campaigns of Sind and Afghanistan, A.D. 1838-43. The names of the officers are inscribed on tablets in the chancel. Special memorials of officers who died during the last Afghan war were erected in 1882. The wall behind the altar has been decorated with mosaic tiles by the 19th Regiment, N. I., in memory of three of their officers; a reredos has been erected by the friends of twelve officers of various corps; the altar was given in memory of two officers; and the marble pavement in memory of those who were brethren of the Guild of the

¹ The present spire was erected in 1827 in place of the original spire which was destroyed by lightning in 1826. When Mr. Clow landed (1815) he had to hold service at first in the Mess-room of the Town Barracks and afterwards in a room in the old High Court. The Bombay Tract Society was founded in the vestry of St. Andrew's Church in 1827.

² The site of the original Trinity Chapel is now occupied by a market (K. N. Kabraji's Reminiscences, 1901).



Holy Standard. The general memorial of all the officers, non-commissioned officers and men of the Bombay Army was erected over the principal entrance in 1883. The colours of the old 24th Regiment, N.I., are preserved in the building.¹ Other churches are St. Nicholas' church, opposite the dock gates in Frere road, which is chiefly intended for the use of sailors; the Wesleyan Methodist church on Colaba Causeway, the foundation stone of which was laid by Lord Reay; All Saints' church on Malabar Hill built in 1882; the Bombay Baptist church in Bellasis road; the United Free Church of Scotland in Waudby road, opened in 1896; the Bowen Memorial church on Apollo Bandar; St. Mary's church at Parel, built in 1883; Christ church on Parel road, of which the history is closely connected with that of the Education Society's schools, near which it stands; St. Peter's church in Mazagon opened in 1859, which contains a memorial window to those who were drowned in the P. & O.S.S. *Carnatic*; Girgaum Mission church, opened in 1869; St. Paul's church, Kamathipura, opened in 1871; and the Baptist church opened in 1874. The present site of St. Peter's church has been acquired by the Port Trust in connection with their new railway to Sion; but a new building will be erected in the immediate neighbourhood.

At the date of the cession of Bombay to the English, the chief Roman Catholic churches on the Island were those of N. S. de Esperança, N. S. da Salvação, N. S. de Glória, San Miguel, and the chapel of N. S. de Bom Conselho. The church of N. S. de Esperança originally stood on the Esplanade, the only sign of its former existence now remaining being the cross which stands on the open ground near the Native Infantry lines.² In 1760 it was removed in connection with the defences of Bombay, and another was erected in its place at the cost of Government in Kalbadevi. This is a Propaganda church under the Archdiocese of Bombay, and is now a cathedral. This was probably the church to which Fontanier referred

Roman
Catholic.

¹ For further details see Bombay Times of 30th January 1858 and Maclean's Guide to Bombay. Amongst the donors was Sir Cowasji Jehangir.

² Govind Narayan's Description of Bombay

in 1844 in the words :—“ La grande église catholique de Bombay est peut-être la plus belle construction de l'île, après la maison de ville : elle est dans la ville noire et est dirigée par un curé ; ses propriétés et ses revenus sont considérables.” The other churches mentioned above are still in existence, having been improved and rebuilt from time to time. N. S. de Gloria is supposed to have been endowed and built by Antonio Pessoa, Lord of the Manor of Mazagon (1548-71). It was rebuilt and renewed in 1810. It is a spacious church capable of accommodating 2,000 people. It is the cathedral of the Bishop of Damaun. The other Padroado churches (under the Bishop of Daman) are the church of Cavel (N. S. de Saude, or Our Lady of Health) built in 1794; the church of Dabul (St. Francis Xavier's national church¹) erected in 1872; N. S. de Salvação built in 1596 and repaired in 1858; and the San Miguel church of Upper Mahim, built probably in 1540. Santa Cruz de Parel (the church of the Holy Cross) was originally an affiliated chapel built in 1883. It was raised to the dignity of a church in 1904. The chapel of N. S. de Bom Conselho is now affiliated to San Miguel.

The Propaganda churches under the Archdiocese of Bombay are the cathedral church of N. S. de Esperança at Kalbadevi; St. Anne's church in Nesbit road, Mazagon; N. S. de Rozario, Mazagon; the church of the Holy Name, Fort; and the chapels of Mount Carmel, St. Joseph, St. Teresa and St. Anne. The chapel of Mount Carmel, was erected in 1721. Since 1905 it has been closed. The church, which stands on Wodehouse road, was designed by Mr. W. A. Chambers and was opened for worship in January 1905. The façade of the building is surmounted by two lofty towers, and is flanked on either side by the residence of the Roman Catholic Bishop and the Convent school. The church bears the title of “ the Church of the Holy Name ” and serves as a parish church for Roman Catholic residents in the Fort. The old church in Bhuleshwar, referred to above, is the Roman Catholic Cathedral of Bombay.

¹ It is known as the National Church, as being the most popular church among the Goans.

Cotton Green :—The original Cotton Green of Bombay was known as the Bombay Green and occupied the area between the old Secretariat on the south, the entrance to Bazaar Gate street on the north, the Town Hall on the east and the Cathedral and Church Gate street on the west. It was a spacious area, described by Grose in 1750 as “pleasantly laid out in walks and planted with trees round which are mostly the houses of the English inhabitants.” In 1813 a writer spoke of it as “covered with bales of cotton and other merchandize entirely unprotected,”¹ furnished with cotton screws,² and surrounded by trees of which the most noteworthy was a tamarind, beneath which it was customary to hold public auctions.³ Up to 1823, the mercantile community was allowed to stack cotton on the Green. Around the Green were various public offices, and on an enclosed portion stood the statue of the Marquis Cornwallis, protected by masonry arches, and surrounded by a railing where palanquins waited for hire.⁴ The neighbourhood of the statue was described in 1842 as somewhat of an eyesore, being strewn with cocoanut shells, old shoes and rags: and on this account possibly the question of converting the Green into a garden was brought forward.⁵ Two years later (1844) the Agricultural Horticultural Society of Western India was reported to the contemporary press to have commenced making a flower garden on the Green, the stony parts next to the Town Hall being converted into “rock-works, mounds, tanks and canals.”⁶ No definite alteration of the Green however took place until 1863, when Mr. Forjett, the Police Commissioner, conceived the idea of converting

¹ Milburn's Oriental Commerce, I. (1813).

² Bombay Courier, March, 1811.

³ *Ibid*; Fontanier (*Voyage dans l'Inde*, 1844) writes:—“La place est couverte de gazon et entourée d'arbres, parmi lesquels on distingue des tamarins sous lesquels, d'après un ancien usage, on fait les criées publiques.” The famous tamarind-tree where auctions were held, stood near the Cathedral and was responsible for the word *Amlî-agal* (in front of the tamarind) by which the hack-carriage drivers of earlier years denoted the Cathedral (*vide Edwardes' Rise of Bombay*). This tree was cut down in November, 1846 (Bombay Courier, 13th November 1846).

⁴ Mrs. Postans' Western India in 1838, Vol. I., p. 25.

⁵ Times of India of 4th June 1842 and October 26th, 1842.

⁶ *Ibid*, June 5th, 1844 and October 23rd, 1844.

without the intervention of the native dealer. The cotton season opens at the *Diwali* in the month of November, when the dealers bring out to their *jathas* the balance of the previous crop which has been stored throughout the monsoon; and from that date until the monsoon again breaks in the following June, the place forms a striking picture of busy life, rendered peculiarly attractive by the singular and varied costumes of the people. The busiest time of the year falls in March, April and May.¹ It is now under contemplation to remove the Cotton Green from Colaba to Mazagon in connection with the new Port Trust harbour works on the east of the island and the new Harbour Branch railway.

Customs House :—From 1665 to 1714 the English Customs House was situated at Mody Bay, to the east of the Town Barracks near the Fort market. It formed a part of what was known as the India House, regarding which and their other properties, the Court of Directors remarked in July 1684 :—“ We understand we have great warehouses as also an hospital, a large house called the East India House, as also the *chektry* (*chhatri*) or bandar and great stables. Of all of these little use is made, and no profit at all to the Company. On the contrary the Sidi when he is there with the Mughal fleet makes use of them to live in and to secure and fit his rigging. This will make but a mean account for the great expenses the Company have been at in erecting such chargeable edifices. We therefore would desire you to spend some serious thoughts and to invent some means whereby these buildings may be employed to make us some better return for our great cost.”² Five years after this complaint, the Sidi turned the building to worse uses than a rope-walk, for according to Hamilton, he placed “ four great guns in the Customs House, commonly called the India House.” Though the Customs House was at Mody Bay, the chief bandar or landing place, on which stood the great *chhatri* or pavilion alluded to above, was at the present (1909) Town Customs bandar; and on this account probably

¹ Maclean's Guide to Bombay (1900), pp. 201, 202.

² Bombay Gazetteer Materials, III, 589.

Governor Aislacie was induced in 1710 to build new warehouses at the Bandar head.

The warehouses built in 1710 formed the nucleus of the present (1909) Customs House which bears on a slab over the porch the East India Company's arms and below them a much defaced inscription "The Honourable Aislacie, Esq., 1714." As the masonry seems throughout to be of the same age and style, there is little room for doubt that the whole façade of the building was completed in that year. The inner flat-roofed row of buildings parallel to the street front and between that front and the bandar basin originally ran in an unbroken line, and up to the year 1758 comprised three storeys instead of two. The precise date of their construction cannot be traced, but in all probability they are older than the street-front, and they were certainly used originally as warehouses.¹ In 1728 the bandar pier was rebuilt, and in 1755 Captain DeFunck, the Company's Engineer, proposed to throw a fortified line in front of the warehouses, which at that date were defended only by a small battery on the bandar pier. Two years later (1757-58) the warehouses were altered in order to provide living accommodation for the Company's covenanted servants, who had hitherto resided within the Castle. The alterations took the form of two buildings at each end of the Bandar which to-day (1909) form the wings of the Customs House. It was in the inner flat-roofed block of warehouses that Forbes, the author of *Oriental Memoirs*, lived when a young writer in the Company's service and described how, unable to afford either supper or a light, he spent the evenings reading by moonlight a small-type Shakespeare on the flat roofs.² In 1788, when Rama Kamati's building in Bazaar Gate street had become very ruinous, Government offered to the Mayor's Court a room and offices in the front row of warehouses; but the members of the Honourable Court rejected the offer with scorn on the grounds that the situation was inconvenient, and

¹ A statement has been made that the Customs House front was originally a Portuguese barrack. There is no evidence to support this statement, and in all likelihood the Portuguese had no barracks outside the castle.

² *Oriental Memoirs*, I, 166. This was in 1770.

BOMBAY GREEN, SHOWING CUSTOM HOUSE. 1864.



that it would be highly derogatory to their dignity to sit there.¹

In 1802 the front row of warehouses was turned into the Customs House, and continued to be utilized unaltered until 1840, when a considerable number of complaints were made regarding the inadequacy of the building for the transaction of commercial business. Trade had increased so greatly since 1814 that both the wharf and the bandar were the scene of continuous confusion; and the goods of individual merchants were continually being mislaid or altogether lost. In response to these complaints and a strongly-worded memorial from the Chamber of Commerce, some amelioration of these conditions was effected. But the Customs House, as it appears to-day (1909), is the result of extensive alterations carried out in 1895, which consisted of the addition of the top storey, the facing of the walls to represent stone blocks and the erection of the porch,² which has since been surrounded by grass plots and beds of plants. Electric lights and fans were installed in the building in 1908. A tablet has been placed near the front gate commemorative of Sir Charles Pritchard's work in connection with the Customs and Salt duties.

. Dadar Distillery :—The Dadar distillery was opened on the 1st January 1879. Previous to that date, distillers were permitted to set up stills in their own houses and in the plantations, so that it was exceedingly difficult to control the manufacture of toddy spirit or regulate the duty chargeable upon it.³ The distillery is situated about 7 miles from the Fort and about 50 yards distant from the Dadar station of the B. B. & C. J. Railway, and lies on the border of the cocoa-nut plantations which stretch from Varli to Mahim. It is enclosed by a masonry wall 10 feet high, and inside are a

¹ For further details, see *Bombay Gazetteer Materials*, III, 580-592.

² *Times of India*, June 13th, 1895.

³ In connection with special enquiries made between 1726 and 1736 anent a scheme for the purchase of Bombay by the Portuguese Government, it was reported that two distilleries existed at Mahim and Bombay "where the juice or *sura* of brab and coco-palms was made into country-spirit yielding an estimated revenue of Rs. 2,000, representing a sale-value of Rs. 20,000."

well and a small tank from which water for distillery purposes is obtained. The liquid toddy refuse is eventually emptied into the sea. The distillery is in charge of a chief inspector, assisted by one inspector and three sub-inspectors of the Excise Department, and is guarded by Akbari peons. It is open from 6.30 A.M. to 7.30 P.M. The general duty of the chief inspector consists in seeing that distillers conform to their license conditions and observe all rules. The gauging inspector brands all casks used for the removal of liquor, tests all the liquor passed out, and is responsible for seeing that the liquor passed out agrees in quantity and strength with the entries in the permits.

The duty is levied at the rate of Rs. 35.6 per gallon of 25° U.P. and Rs. 11.00 per gallon of 60° U.P. In addition to the duty, an establishment contribution of Rs. 0.16 per gallon, irrespective of strength, has been levied since the 1st August 1888. There are (1910) about 17 licensed distillers, most of them being Bhandaris; and the liquor manufactured by them amounts to about 32,000 gallons of 25° U.P. and 62,000 gallons of 60° U.P. per annum. The revenue realised from the duty amounts to about Rs. 1,75,000 a year.

Toddy is brought from the oars and plantations by the tappers in earthen pots holding about $\frac{1}{2}$ gallons. Each pot is marked with the distiller's license number and with its capacity in gallons and pints. As the pots enter the distillery, the quantity they contain is noted under the distiller's number; and the total quantity introduced is posted up daily in the account books of the distillery. Toddy is usually brought in between 6.30 A.M. and 12.30 noon and between 4.30 P.M. and 7.30 P.M. There is one kind of still in use at Dadar—the *hath bhatti*. It comprises a copper boiler, a hollow trunk of the cocoanut tree or betel-tree, bound with coir connecting the boiler with the receiver and condenser, and the receiver and condenser, which is made of copper. The full capacity of the copper boiler ranges from 32 to 46 gallons, and it costs about Rs. 40, and that of the receiver and condenser is about 22 gallons. The cost of the latter is Rs. 17.

Toddy brought into the distillery is placed in open barrels until fermentation is complete, which usually takes two or three days. The boiler of the *hath bhatti* is charged with 22 to 38 gallons of toddy according to its size. At the first distillation the manufacturer usually draws from 6 to 13 gallons of liquor of strength varying between 50° and 70° U. P.; when 25° U. P. liquor is to be made in the *hath bhatti*, from 6 to 14 gallons of toddy with 6 to 11 gallons of *rasi* (*i.e.*, 60° U. P. liquor) are placed in the boiler and distilled. Very weak liquor is subsequently drawn and is used for reducing the strengths to the prescribed standards. Toddy spirit of 25° and 60° U. P. only is allowed to pass out of the distillery, and the strength of liquor must not be reduced by the addition of water but of weaker spirit.

The liquor is sold at the rate of Rs. 9½ per gallon of 25° U. P. and Rs. 4 per gallon of 60° U. P. in the liquor-shops of the city and of the Salsette and Bassein talukas of the Thana District. Maratha mill-hands from the Konkan, the Kolis, Agris and Goanese are the chief consumers of *feni*, while *rasi*, which is drunk warmed, is in great favour in Varli, Sewri, Mahim and Matunga.

David Sassoon Industrial and Reformatory Institution.— In 1843 Dr. Buist founded near his house at Sewri a school of industry intended both for the reformation of juvenile criminals and for the improvement of industrial arts.¹ In 1856 the school had so far progressed that the committee of management applied to Government for aid; and while the matter was still under consideration, the Sassoon family came forward with an offer to deposit Rs. 30,000 in the Government treasury and to provide suitable premises for a juvenile reformatory, provided that Government would agree to contribute a sum equal to the interest on the deposit and lend the services of an Engineer as Superintendent of the institution. This arrangement having been approved, the school of industry, under the title of the David Sassoon Industrial and Reformatory Institution, was removed from Sewri to Chunam Kiln road in 1857, where it still stands. Owing however to the expansion of

¹ K. N. Kabraji's Reminiscences in "Times of India," 1901 : Mumbaicha Vrittant, Gen. Admn. Report, 1856-57, p. 43.

Dockyard) were "the pride of Bombay and the astonishment of travellers."¹

By 1811 two more docks had been built in the Government Dockyard. These docks contained a public landing-place, the use of which was restricted,² and merchant ships were allowed to be docked in them on payment of certain fees. As regards private docks mention is made of a mud dock in Mazagon in 1767 and 1776. Hamilton speaks of a good dock for small vessels in 1810,³ which in 1859 was handed over to the P. and O. Company, who are still in possession of it. It is known as the P. and O. Company's small dock. Another is the British India Company's dock constructed in 1845 by a Persian merchant, Aga Mahomed Rahim Shirazi. The P. and O. Company leased this dock from 1846 to 1870, when the British India S. N. Company became tenants of it. The Ritchie dock of the P. and O. Company was built between 1859 and 1867. It was designed to take one of the largest steamers owned by the Company at that date, when cleared of all stores and cargo. The dock has been considerably improved since that date, is furnished

¹ See the Voyages of Grose (1750), Ives (1757), Niebuhr (1763), and Parsons (1775).

² During the 17th century the Customs bandar and the Mahim bandar were the only landing-places in Bombay. In Mahim Bay ships of 800 tons were built and launched until the opening of the 18th century. The bay subsequently silted up and was abandoned. The chief landing-place was the Customs bandar close to the present Customs House. During the first half of the 19th century the landing-places in use in Bombay were the Town, Masjid, Bori, Mahim, Customs House, Mazagon, Back Bay, Carnac, Clare, Colaba, Apollo, Jakaria and Chinch bandars. The Apollo bandar was not much used until after it was repaired in 1819. The Bori bandar was improved in 1852. All these landing-places were imperfect and of use only at certain hours. At low-water a traveller had to be carried ashore through the mud. In 1870 the Harbour and Pilotage Board improved the Mazagon pier and made additions to the Apollo pier. The other bandars and wharves were improved in subsequent years. In 1881 Bombay possessed 38 bandars and wharves including the docks. Of these the Gur-Carriage bandar was closed and given to the B. B. & C. I. Railway Company, who built the Colaba Railway station on the site. Bombay now possesses 41 bandars and wharves. See also Vol. I. Chap. I. For details of docks between 1810 and 1872, see *Bombay Gazetteer Materials II*, 520 and 521.

³ The Mazagon Dock is mentioned in 1813 as a good dock for small shipping.

The first stone of the Prince's Dock¹ was laid by H. R. H. The Prince of Wales on the 11th November, 1875, with full masonic honours, and the dock was opened for the first time on the 1st January, 1880.² At the opening ceremony several unfortunate accidents occurred to the steamers taking part in the procession, which so prejudiced the public mind that the dock was practically boycotted for a fortnight. The marine insurance companies declared that their policies did not cover this new risk and the owners of steamers, with the approval of many importers and exporters, declined to use it. On the 9th January Captain Morland, the Port Officer, approached one of the partners of Messrs. Graham and Co. and asked him to assist in frustrating the boycott by berthing a steamer of the Anchor Line or Hall Line in the new dock; and on receiving the personal assurance of the Governor (Sir Richard Temple) that the firm should suffer no loss from detention or damage to cargo, Messrs. Graham and Co. sent the Anchor Line S.S. *Italia* into the dock on the 15th January. After much opposition from native mercantile firms who had been misled by the *mukadams* (loading and unloading agents), and by dint of satisfying the fears and objections of the influential export firms Messrs. Graham and Co. were enabled to load and unload their vessel without difficulty. This action demonstrated to the satisfaction of the most prejudiced and timorous the great advantages afforded by the dock; and the S.S. *Italia* was shortly followed by other steamers belonging to the same line and the Hall Line. Neither the Peninsular and Oriental Company nor the British India Company made use of the dock till some time later.

¹ The Prince's Dock is situated on the Elphinstone estate. In 1872 Mr. Ormiston designed an enormous basin, the Elphinstone basin and this basin has been altered and merged in the dock.

² The last stone of the dock was laid by Sir Richard Temple on the 10th April, 1879 and the water was then admitted into the dock. For further details see "Times of India" of 12th April 1879 and 6th January 1880.

³ In return for their action the Port Trustees allocated two wharves on the west side of the dock to Messrs. Graham and Co., and also granted free entrance to their steamers for a certain period, and subsequently entrance at an exceptionally reduced rate.

The dock has an area of 30 acres of water, is 1460 feet long and 1000 feet wide, and has walls 37 feet deep. From the north end a jetty, 700 feet long by 240 feet wide, runs down the centre of the dock. The length of berth-accommodation is 5960 feet and along the outer wall adjoining the harbour 1590 feet. It affords a total quay of 6910 feet including the effective portion of the outer harbour wall. There are two entrances, the northern 66 feet and the southern 55 feet in width. The depth on the sills of both is 28 $\frac{1}{2}$ feet at high water ordinary spring tides. The dock can accommodate 16 steamers alongside the wharves.

There are fifty-five movable hydraulic cranes for working cargo, capable of lifting 30 cwt. through a height of 60 feet; and at the head of the jetty is a crane which is capable of raising 30 tons; also a five-ton hydraulic capstan for warping vessels into the dock. The gates and sluices are worked by hydraulic machines.

There are also two capstans, capable of sustaining a strain of 5 tons, and two of 11 tons, for warping vessels at the entrances. Eleven closed transit sheds, having an area of 416,509 square feet, have been erected on the wharves, besides nine warehouses¹ with an area of 191,965 square feet. Fresh water is laid along the wharf, and is available from numerous hydrants for ordinary use and in case of fire.

The dredging operations in the Prince's Dock channel alter both the depth and shade of it, by bringing the scour from the passage west of Butcher's island across the north-east and south-west extremes of the bank. The leading mark for the centre of the channel is a disc on the small flagstaff on the north side of the north entrance to the dock, in line with a double disc in the back-ground bearing W $\frac{3}{4}$ N.

The beacon on the north end of Cross island spit is about a hundred feet south of the Prince's Dock channel, the limits of which are defined by two cones on poles on the north side, and two drums on poles on the south side. The masonry and excavations of the dock were contracted

¹ Some of them are upper storeyed and built according to the principles of fire-proof construction.

for by Messrs. Glover & Co. at a cost of 42 lakhs. The total cost was 76 lakhs. The material excavated in forming the dock was utilized for the further reclamation of Mody Bay to the south of the site.

The dock traffic office is placed at the entrance to the Prince's and Victoria Docks and is provided with a large turret containing a clock and surmounted by a time ball that falls daily at 8.30 a. m. The traffic office was commenced in January, 1888 and completed in 1890. In 1881 the Sassoon dock and the Arthur and Mazagon Powder Works bandars were closed for dutiable traffic and the Customs Department was concentrated at Prince's Dock, Carnac bandar and the Town Customs House.

The Merewether dry dock, situated at the north-west corner and opening out of the Prince's dock, is so named after Colonel Merewether, R.E., a former Chairman of the Port Trust. The opening ceremony was performed on the 3rd March 1891 by Lord Harris.¹ The dock is principally intended for the painting and cleaning of vessels and the execution of slight repairs. In special circumstances it is also used for heavy repairs. The dock has an entrance length of 530 feet, a breadth at the entrance of 65½ feet and a depth on the sills of 25½ feet at high water ordinary neap tides. Should a vessel be found not to be properly on the blocks or not to be shored satisfactorily, it is possible at once to raise the level of the water and keep the vessel water-borne as long as may be necessary. The fees charged for the use of the dock vary according to tonnage, subject to a minimum of Rs. 400 for the first day.²

The construction of the Victoria Dock was commenced in January 1885 ; the ceremony of admitting water into the basin was performed by Lady Reay on the 21st February 1888 ; and on the 12th March of the same year the dock was opened. The dock absorbed the old Masjid and Nicol bandars, and the material excavated during its construction was principally utilized in forming two

¹ It was commenced in February 1889. The material obtained in excavating it was utilized in effecting an extension of the reclamation at Tank bandar. The cost of construction was 17½ lakhs.

² For further details see "Times of India" of 5th March, 1891.

large jetties in Mody Bay. The Victoria Dock, which together with Prince's Dock, cost 221 lakhs, was designed to provide for the loading and unloading of vessels requiring deep-water berths. It has an area of 25 acres of water, is 1,270 feet long and 1,000 feet wide and has three jetties on its western side, each 400 feet long and 230 feet in width. The length of berth accommodation is 7,425 feet, and the total length including the effective portion of the outer harbour wall is 7,805 feet. The communication passage with the Prince's Dock is 64 feet wide and is closed by a caisson. The dock has one entrance, 80 feet wide, and a communication passage 64 feet wide. At high water ordinary spring tides there is a depth of 30½ feet on the sill, the bottom of the dock being 3 feet lower than the sill. Fifty-eight moveable hydraulic cranes are provided for dealing with cargo, and on the south jetty is a crane capable of raising 100 tons through a height of 40 feet. Closed transit-sheds covering an area of 674,323 square feet have been erected on the wharves, besides 4 warehouses with an area of 200,402 square feet.

Sassoon Dock. The Sassoon Dock at Colaba is situated close to the present Cotton Green and was opened in 1873 by Messrs. D. Sassoon & Co. In 1879 it was purchased by Government on behalf of the Port Trustees, and was used for several years afterwards as a boat basin and landing-place for troops. It is now used for the landing of cotton, wool, coal, railway materials, military stores and baggage accompanying troops from foreign or customs ports and for the shipping of cotton, wool, hemp, jute, rags, seeds and military stores. There are a troop-shed and quarters in the dock for the use of military drafts and reliefs. Excavated out of the solid rock, the dock measures 645 feet in length by 292 feet at its broadest part and covers a water-area of 3½ acres. The entrance is 40 feet wide and the sill is 26½ feet below the level of the wharves. The depth of water varies from 18 feet on the sill at high water neap tides to 21½ feet at high water spring tides and occasionally reaches 23½ feet. The wharves have a frontage of 1,500 lineal feet, and an area of 2½ acres, but there are in addition to this space upwards of 18,000 square yards of adjoining land that can be used for storage, &c.

Vessels of 18 feet draught can enter or leave the dock, and for those drawing up to 20 feet there will be sufficient depth of water during the eight consecutive days of spring tides. Moorings have been laid down off the entrance in a position where there are 24 feet of water at low spring tides, and other buoys are fixed for warping and checking vessels as they enter and leave the dock. It is calculated that vessels of 300 feet long could enter easily, but the dock is best suited for steamers up to about 1,000 tons net register, of which it can accommodate five at a time alongside the wharves. If necessary three more vessels lying outside the others could be worked by means of staging.¹ The wharves are provided with lines of rail for the removal of goods up to 20 tons in weight, and the dock is connected by a siding with the Colaba terminus of the B. B. & C. I. Railway.

The new Alexandra Dock and the Hughes Dry Dock are now (1910) under construction, the foundation-stone of the former having been laid by H. R. H. the Prince of Wales in November 1905. The former is designed to cover an area of $49\frac{1}{2}$ acres and to afford a length of nearly 3 miles of quay, including the outer wall. The entrance will be 100 feet wide and the sill is $35\frac{1}{2}$ feet below mean high water level. The bottom of the dock is 2 feet lower, affording a depth of $36\frac{1}{4}$ feet for vessels to load during ordinary neap tides. The dock is to be completely equipped with hydraulic cranes, railway sidings and sheds, and provision is made for mail steamers, before entering the dock, to land passengers at the mole on which a railway station is to be built with a branch railway connecting with the main lines serving Bombay. The dry dock will run parallel to the wet dock entrance and will be 1,000 feet in length with an entrance 100 feet wide and with a sill $33\frac{1}{4}$ feet below high water ordinary neap tide. The docks are estimated to cost 373 lakhs and are being constructed by Messrs. Price, Wills & Reeves. The contract with this firm for the masonry and excavation work was signed on the 19th April 1904 and provides for the entire completion of the works by the 1st June 1912.²

The Alex.
andra Dock.

¹ Report of the Bombay Chamber of Commerce, 1874-75, pp. 9-10

² Review of Bombay Port Trust Operations, 1873-1905.

The granite for the hollow quoins and sill stones of the iron-gates was prepared in Cornwall, while most of the granite for copings, etc., is being obtained from Hyderabad (Deccan). Rubble is being quarried at Udwada on the B. B. & C. I. railway, and at Mandwa and Hog island across the harbour, and other stone is being obtained from Sewri on the island of Bombay and from a quarry beyond Thana on the G. I. P. railway.

Government Dockyard. The position of the Government Dockyard on the east side of the island was originally determined by the existence of the bay, which in early days formed the only secure anchorage for small vessels. This bay, which has been so altered as to be barely recognizable to-day, comprised the lower portions of the present Bombay and Duncan docks, a part of the wet basin, and the waters lying between Bombay Castle point on the north and the entrance gate of the lower Bombay dock on the south. Frequented by native craft from the earliest times, the bay was first used as an anchorage for European vessels in 1531, when Nuno da Cunha, the Viceroy of Goa, selected it as the *rendezvous* of his expedition against Diu¹: and since that date the site of the present dockyard has formed the principal maritime area of Bombay. During the early years of British dominion, the need of a good dock was continually emphasized by the authorities both at home and abroad; for the only dry dock at that period was a mud basin situated on the modern site of the Middle and Lower Bombay docks, near the centre of the Dockyard, in and out of which the tide flowed at will. No definite step however was taken until January, 1748, when the Bombay Council decided to borrow a sum not exceeding

¹ The Portuguese, on obtaining regular possession of Bombay in 1532, commenced fortifying the Island. Old foundations, apparently dating back to the epoch of Portuguese dominion, were discovered during the excavation at the Dockyard in 1905-06.

² *Bombay Town and Island Materials II*, 516. Sir John Wyborne, Deputy Governor, wrote in 1686:—"All ships in these seas, when they know of a dock where they can lie securely, will come to clean and repair. Had there been a dock, the ship *Falcon* had not left her bones here. We can only say it will be a necessary profitable work, when done." Up to 1704 the arrangements for repairing ships were described as "wretched"; but they were somewhat improved under the auspices of Sir Nicholas Waite between 1704 and 1707.

Rs. 5,000 for the construction of a proper dock on the site of the mud basin, and to indent upon Tellicherry for the timber required for the dock-gates. In July, 1750, they were able to declare the dock completed and to fix the dues payable by ships using it, namely "Rs. 150 for the first spring, and Rs. 100 for every spring they remain in afterwards".¹ This dock, which was enlarged in 1751, was the first dry dock constructed in India and is now known as the Upper Old Bombay Dock. It measures 209 feet in length, 47 feet in breadth, and 15 feet in depth, and forms the western section of the southernmost of the two lines of docks, lying parallel to one another near the centre of the Dockyard.

First Dock.

The dock proved such a success that the construction of a second outer dock was sanctioned in 1754 and completed in 1762.² The latter, which shows traces of hurried workmanship,³ is now known as the Middle Old Bombay Dock and measures 183 feet in length, 51 feet in breadth and 20 feet in depth. It is said to have cost Rs. 12,000 and to have been "capable of holding a 70 gun ship." A third outer dock appears to have been commenced about the same date, and was completed by the end of 1765. It is now the Lower Old Bombay Dock, and measures 256 feet in length, 51 feet in breadth and 20 feet in depth. For the next forty years these three docks, one within another were the boast of Bombay and the wonder of travellers;⁴

Second Dock.

Third Dock.

¹ *Bombay Town and Island Materials*, II. 517.

² In 1756, while the work was in progress, Captain Pearse of the *Edgecote* requested that the protecting dam might be broken and his ship be allowed to pass in. On his agreeing to pay the cost of demolition and any extraordinary expenses that its absence might entail upon Government up to the time the dock-gates were fixed, his ship was allowed to enter.

³ Apparently progress was very slow; for Admiral Cornish wrote from Trincomalee in June 1762 urging the completion of the dock before the return of the squadron. "The dock", he added, "is of the utmost consequence. It is the only means of preserving the two capital ships of the squadron."

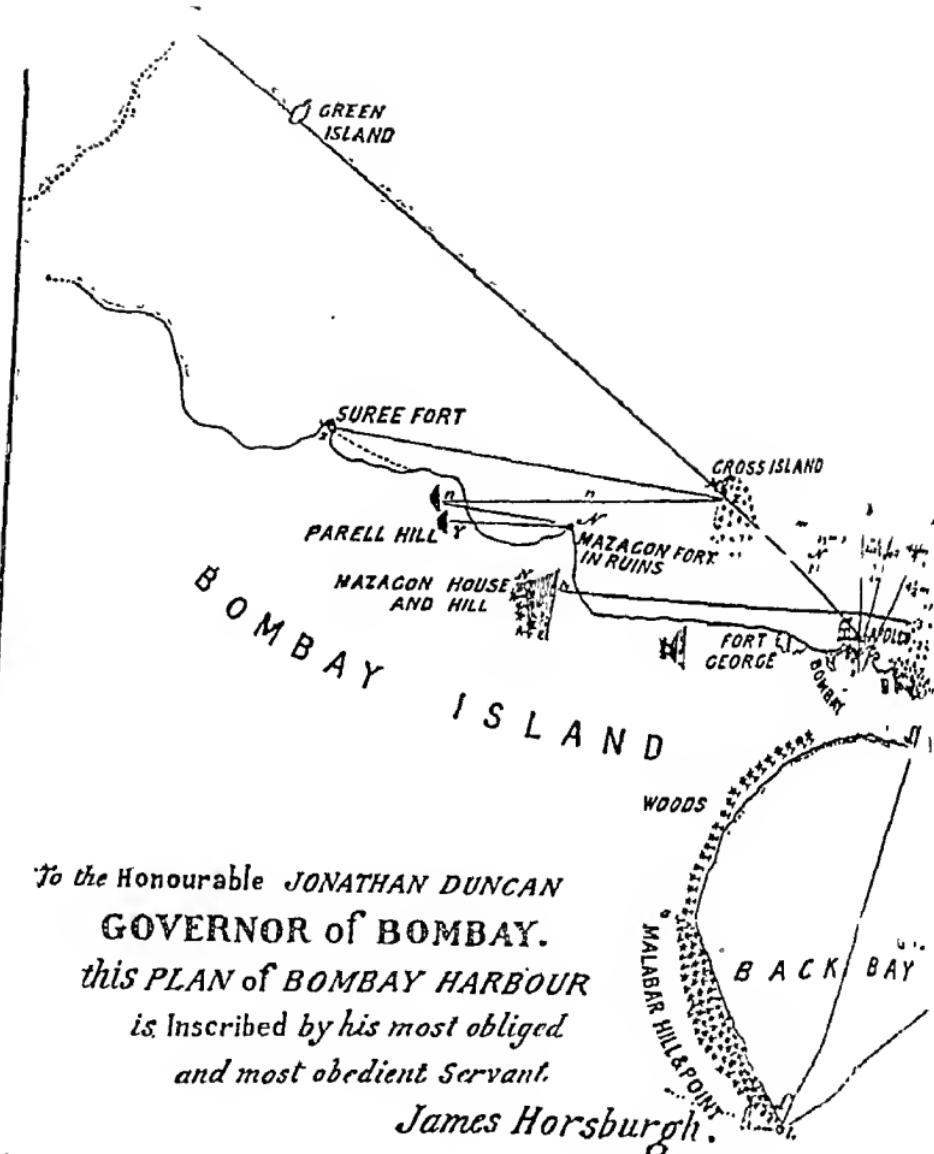
⁴ See Grose's *Voyage* (1750) and Ives' *Voyage* (1758). Niebuhr in 1763, before the completion of the third dock, wrote:—"Among the large number of good arrangements made by the English in Bombay for trade and shipping, the dock is much the most considerable and important. The work is partly rock-cut, partly of cut-stone. Two ships can be careened at a time, and a third basin is preparing. The work though costly brings a considerable return. Strangers pay very dear for liberty to careen in these

and they attained such popularity that the Bombay Government were able to enhance the dues from the original Rs. 150 and Rs. 100 to Rs. 450 and Rs. 350 in the case of English ships, and Rs. 600 and Rs. 500 in the case of foreign vessels. The three divisions of the dock, as may be seen to-day, are not in the same line, owing to the fact that, to save the labour of cutting and blasting, the constructors of those days were obliged to follow the general trend of the rock and to content themselves with cutting away only such portions as jutted inconveniently into the area of excavation.

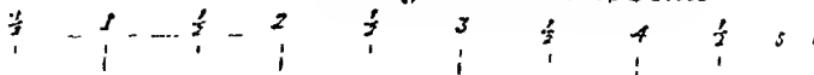
In 1782, during the Governorship of Mr. Hornby, the Admiral requested that either new docks might be constructed or the old docks altered for the greater convenience of the squadron ; but no action was taken until 1804, when the Court of Directors desired the Bombay Government to arrange for the construction of a 74-gun man-of-war. Colaba and Butcher island were both examined for sites for a dock suitable for the building of so large a vessel,

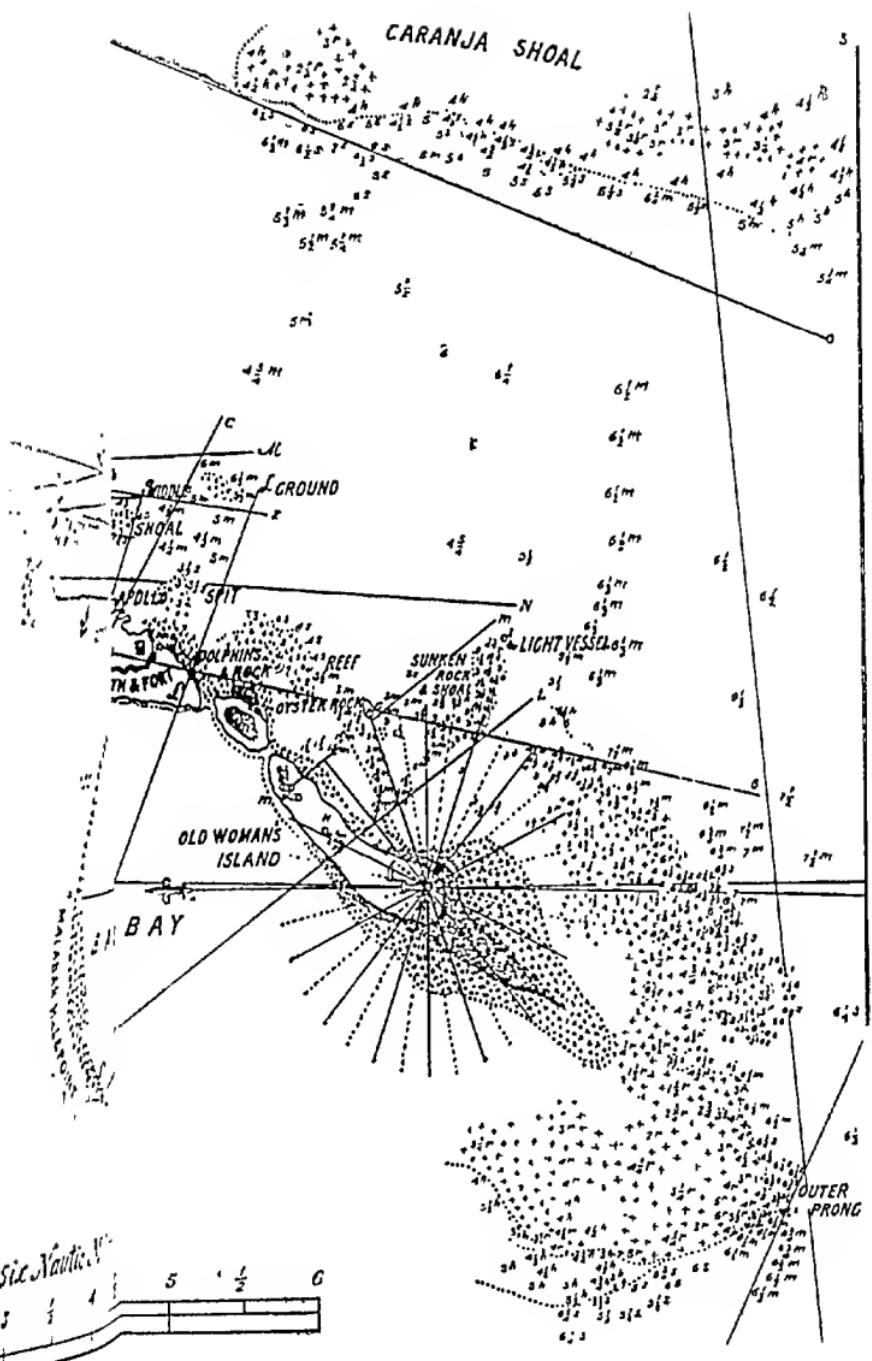
Forth Dock. but it was eventually (1805) decided to build a new dock in the Dockyard and to entrust the work of construction to Lieutenant Crozier of the Engineers. A second new dock was also sanctioned about the same date, the estimated cost of the two together being 2½ lakhs. Owing to an unfavourable report upon Lieutenant Crozier's arrangements, the work was subsequently entrusted to Captain Cowper, who, in spite of the want of trained artizans, of interruption by the tides, and of the very solid nature of the rock, had by the close of 1807 cleared away all his predecessor's work and had completed the first of the two new docks. This dock, which was named after the Governor, Mr. Jonathan Duncan, is now known as the Upper Duncan Dock, and measures 286 feet in length, 63 feet in breadth and 23 feet in depth, the sides being of fine cut stone and the bottom of solid

basins. When I was in Bombay, I saw a ship of war belonging to the Imam of Sama, which he had sent to Bombay solely on purpose to be refitted." Parsons the traveller spoke in 1775 of "such a dry dock as perhaps is not to be seen in any part of Europe either for size or convenient situation. It has three divisions and three pairs of strong gates etc". Forbes also mentions the three excellent docks in 1776.



Scale of Six Nautic Miles





masonry.¹ By July, 1810, Captain Cowper had also completed the outer or repairing dock, now known as the Lower Duncan Dock, and was thanked for his "peculiar and eminent merits in planning and executing the great undertaking." The total cost of both docks was $3\frac{1}{2}$ lakhs. In 1841 the Lower Duncan Dock was widened and improved, and now measures 246 feet in length, 64 feet in breadth, and 18 feet in depth; while in 1843 similar improvements were sanctioned to the Upper Duncan Dock, and were completed by Captain Estridge in July, 1847, the total outlay upon improvements to both docks amounting to more than one lakh.²

In 1890 the need of increased accommodation for vessels of the Royal Navy and Royal Indian Marine led to the extension of the Duncan Dry Dock at a cost of more than $4\frac{1}{2}$ lakhs, and also to the construction at a cost of 14 lakhs of a wet basin, a dry dock for torpedo-boats, and of hydraulic warping-capstans. The wet basin, which lies between the old Customs bandar and the Government dry docks, is triangular in shape, has a water area of five acres, and can accommodate eight vessels of the Royal Indian Marine. It is 26 feet in depth and has a wharfage of 1,600 feet, while at the entrance, which is 60 feet in width, it is furnished with a hauling caisson constructed on the latest principles. In the north-west corner are a small dry dock, capable of accommodating two torpedo-boats, and a boat-slip for the repair of light craft. The designs for the wet basin and for the alterations to the Duncan Dock were prepared by Captain Porter, R.E., and the

*Fifth
Dock*

*Wet Basin
and Torpedo
Dock.*

¹ The Courier of the 2nd January, 1808, contains the following reference to the keel of the 74-gun vessel, which was laid in the Duncan Dock:—"While this paper is going to press, a Royal Salute is firing as a signal that the silver nail has been driven in and united the stem and keel of the new 74. May the ever-enduring Indian teak, under the auspices of our gallant tars, rival the glories of the British oak." The name of the ship was the *Minden*, and the nail was driven by the Governor. (Annual Register for 1808). At the west end of the dock, on a blackened slab about eight feet below the pier level, are carved these words:—"This Dock was erected during the government of the Honourable Jonathan Duncan, Esquire, by Captain William Cowper of the Engineers, 1807."

² The first ship to enter the dock after the completion of these improvements was the P. & O. Company's steamship *Braganza*.

cost of the works, including the cost of engines and machinery, exceeded 16½ lakhs.¹

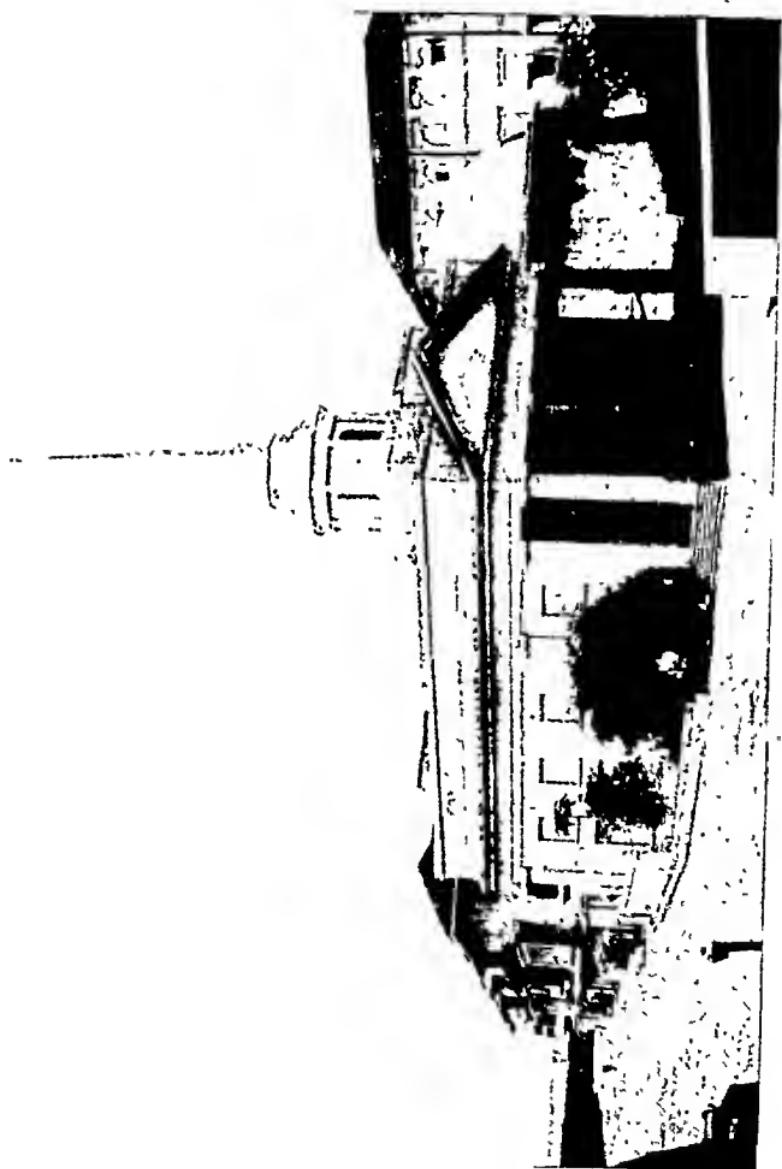
Changes in the Dockyard. In 1735 the Dockyard enclosure was occupied by Marine Officers' quarters, seamen's quarters, a jail (on the site of the present Marine Office) and other buildings. A public thoroughfare ran through the yard, which was bounded on the north by the Doctor's house, now the northern portion of the Marine storehouse; on the east by the harbour; on the west by a wall containing the marine gate and running south to the Apollo Gate of the Fort; and on the south by the ramparts which extended south-east to the Royal Bastion (situated close to the tank near the saw-mills) and north-east from that point to the entrance of the Lower Bombay Dock.²

At the present date (1910), the principal entrance to the Dockyard is the main gate (opposite the Great Western Hotel), built prior to 1798 and surmounted by a clock-tower and flagstaff similar to those in the Royal Dock-

¹The improvements to the Duncan Docks resulted in increasing their length by 60 feet, their width by 48 feet and their depth by 7 feet. The works from start to finish occupied 2½ years, during which time about 2,000 workmen were daily employed.

² The jail and other old buildings were finally removed and the public thoroughfare closed in 1805. Until 1884 the Doctor's House was the office of the Marine Storekeeper. In 1750 (see Grose's map of Bombay) the Bandar pier, which projected from the old Company's warehouse, and is now represented in altered form by the area between the present Dockyard and Customs basins, was the principal and the official landing-place. Viscount Valentia says free access was allowed to the bandar throughout the day. The Bandar house or Company's warehouse was rather nearer the Dockyard than the present Custom House, which dates from 1802, and next the warehouse on the south lay the house of the Superintendent of Marine, and the Marine Storehouse (including the quarters of the Marine Paymaster), which was purchased in 1720 from Captain Ingram for Rs. 3,300. These houses occupied the present site of the Customs godown and the Government Press. South of them again were the General Hospital occupying a portion of the present Opium warehouse, and the Doctor's House, both of which were annexed to the Dockyard premises between 1828 and 1830.

Although the general demolition of the ramparts took place between 1862 and 1865, the portion running north-east from the Royal Bastion was not demolished till 1894. Built into it near the gate of the Middle Old Bombay Dock were two curious caverns, formerly used as an ammunition-store, and latterly as a receptacle for tar and other inflammable substances (see Douglas's Bombay and Western India, I, 144). The wall, forming the western boundary of the dockyard, disappeared gradually as the store-houses were enlarged.



RAMPART ROW (WEST) (formerly The Ropewalk) in 1862.

yard in England.¹ The gate contains the guard-rooms of the Dockyard police on the ground-floor and the quarters of the Warden of the Dockyard on the upper storey. The latter floor was originally occupied by the office of the Comptroller of Marine, and later of the Comptroller of the Dockyard, and after 1848 was used successively as the head-quarters of the Mechanics' Institute and as a dispensary.² On the left of the main gate is the marine storehouse, which was extended in 1885-86 and enlarged in 1896 by the addition of a third storey at the northern end for the accommodation of the Marine Storekeeper's office.³ In the vicinity of the Torpedo Dry Dock is a bomb proof cellar, formerly used for the storage of ammunition for the Bombay Marine; and the smithy beside this dock marks the original site of a boat-slipway, which ran down into the sea and contained on its upper storey the office of the Master Attendant.⁴ Among other sites formerly included in the Dockyard are those of the Sailors' Home, once a portion of the first English cemetery at Mendham's Point,⁵ the Royal Bombay Yacht Club and the Esplanade Hotel Annexe, which were handed over for building purposes between 1880 and 1890; while the private landing-place of the Naval Commanders-in-Chief and Admirals was a broad gangway situated between the lawn of the Yacht Club and the present official residence of the Chief Constructor.⁶

Other notable adjuncts of the Dockyard in old days were the Ropewalk (now Rampart Row West) and the Cooperage. The former was 900 feet long and was

*Ropewalk,
Cooperage
and Sheers*

¹ Through this gate the Duke of Wellington passed in 1801 to inspect the refitting of the expedition from Trincomalee, which co-operated with Sir Ralph Abercrombie's force in the invasion of Egypt.

² The dispensary was removed to its present position about 1898.

³ The Marine Storekeeper's office was located during the first half of the nineteenth century in the old Doctor's house, and between 1886 and 1896 on the second storey of the Storehouse.

⁴ A stone, with three anchors carved upon it, still marks the site of this slipway, which fell into disuse after the construction of the wet basin.

⁵ Many bones were exhumed during the excavation of the foundations of the Sailors' Home; and others have been more recently discovered near the Saw Mill tank within the Dockyard.

⁶ The inlet, spanned by the gangway, has now been filled up. The late King-Emperor landed here on the 8th November 1875.

covered in about 1760;¹ while the latter, described in 1759 as "a shed the coopers work in," was actually situated within the Dockyard until 1742, when pressure of space obliged Government to remove it to a warehouse on the water's edge belonging to Mr. Broughton. From that date the Cooperage continued to occupy hired buildings until 1781, when Rear-Admiral Sir Edward Hughes protested against the proximity of the buildings to the garrison, and Government resolved to "erect a proper shed upon the Apollo ground for the reception of the King's provisions." This shed has given the Cooperage area its name and was in use until 1886, when the new stores were built in the Dockyard. The Sheers were built in the Dockyard shortly after the completion of the Duncan Dock in 1810, and, rising to a height of 85 feet and surmounted by a flag staff and vane bearing the East India Company's crest, formed a conspicuous landmark for nearly a century. Having become untrustworthy, they were gradually dismantled, the last portion being removed in 1905.

*Steam
factory.*

Parallel with the Duncan Dock is the steam factory, built about 1838, in which the iron vessels *Ariadne* and *Medusa*, destined for the China war of 1840, were put together, and the first steamers employed in maintaining communication between Bombay and Suez were built. The present building is replete with all the latest machinery requisite for the construction of modern marine engines.

The Master-builders of the Dockyard The first master-builder was Lowji Nasarwanji Wadia of Surat, who served from 1735 to 1773, and may be said to have founded the reputation of the Dockyard. Perhaps the most famous member of this family (the Wadias) was Jamsetji Bomanji, who built for the British Navy several line of battleships and frigates, remarkable

¹ Parsons, writing in 1775 of the Rope-walk, says that for "length, situation and convenience, it equals any in England, that in the Kingsyard, Portsmouth, alone excepted; and, like that, it has a covering to shelter the workmen from the inclemency of the weather at all seasons. Here are made cables and all sorts of lesser hemp-ropes, both for the Royal Navy, Honourable Company's ships, and merchant-vessels. Besides which all kinds of cables, hawsers, and lesser ropes are made of cocoanut fibre and called *kyar* (coir)."

for their strength and seaworthiness; but several other descendants of Lowji received testimonials from the Court of Directors, the Bombay Government and from British Admirals for their fidelity and meritorious services to the nation.¹ The last master-builder was Khan Bahadur Jamsetji Dhanjibhoy, who retired in 1885. The list of vessels built by members of the family between 1735 and 1863 comprises 170 war vessels and other craft for the East India Company, 34 war ships for the Royal Navy, 87 merchant vessels for private firms, and 3 vessels for the Imam of Muscat.² Since 1885 the work of construction and repairs has been in charge of a Chief Constructor, trained in the Royal Dockyards, and assisted by a full staff of European officers. The original work of the Dockyard included the building of all kinds of vessels, the docking and repair of naval squadrons, the fitting-out of expeditions, and the up-keep of anchorages and subsidiary duties. Though the work at the present time (1910) is nominally the same, it has greatly increased, and through the substitution of steel and iron for teakwood has changed in character. A new class of skilled artisans and mechanics has displaced the former builders in wood, while the very complete steam and electric plant now in use enables the authorities, with only a small temporary increase of hands, to cope successfully with any sudden emergency.

During the earlier years of British dominion some kind of marine establishment was maintained on the site of the *Administra-*
*Dockyard under the orders of the Commodore of the Company's Marine. Among the officials of the establish-
ment were a Marine Storekeeper,³ a Marine Paymaster,*

¹ Rear-Admiral Sir T. Troubridge wrote to the representative of the family in 1802 :—"I have pledged myself you will produce ships that will eclipse those built in England." Maclean's Guide to Bombay.

² These ships, built of teak, were so strong that many of them lasted for 50 or 60 years. It is on record that the *Bombay*, built in 1739 for the Bombay Marine, was "a staunch and stout vessel" at the age of 60. The brig *Euphrates*, built in 1828, is still quite sound in the hull; while H.M.S. *Mecanee*, built at Bombay in 1844 and now serving as a hospital-ship in Hongkong harbour, is reported absolutely sound.

³ Surat Diary, I. 1660-96. The pay of this appointment in 1670 was raised from £o-1-6 to £o-2-0 per day. Apparently these officials had other more lucrative sources of income than their salary.

and a Purser Marine, the two latter offices being combined some time before 1736 and separated again in that year. The Purser Marine was charged with the supply of all provisions and necessaries to ships and had to furnish a monthly bill for them to the Marine Paymaster, who had "the charge and direction of watering and ballasting the Company's vessels and of purchasing what timber and coir were wanted for their service."¹ By 1739 however the post of Marine Paymaster had been abolished, and the Purser Marine, who presumably performed his duties, was granted Rs. 80 per month for salary and diet, Rs. 20 for house-rent, but no house and no palanquin-coolies.²

The post of Superintendent of Marine³ was created about 1739; and by 1742 the marine establishment included, in addition to that official, 8 Commanders, of whom one was styled Commodore, a Purser Marine in charge of the accounts and victualling, a Master Builder, and others in charge of the several departments. In 1754 the post of Master Attendant had also been created, and in 1777 the holder of the post ranked as the second senior officer in the marine and acted as assistant to the Superintendent for the administration of port duties and the sailmaking and rigging establishments.⁴ In 1778 the Superintendentship of Marine in Bombay was abolished; and the Court of Directors ordered the creation of a Marine Board, which however was not actually constituted until 1785 and then only existed for about a year. In its place the two junior members of Council were created Comptrollers of Marine in rotation and were expected to see that the various Marine officials carried out the orders of the Court of Directors, while all orders relative to details of dockyard and marine management were issued by the President of the Council.⁵ So matters remained until 1798, when the Marine regulations were revised and the

¹ *Bombay Town and Island Materials*, III, 210, 211, 212.

² *Ibid.* p. 213.

³ The salary of the Superintendent of Marine in 1739 was £220 a year. This was raised in 1754 to £250, on the understanding that if quarters were provided, the salary was to be reduced by Rs. 240 a year. *Bombay Town and Island Materials*, III, 251.

⁴ *Bombay Town and Island Materials*, III, 251.

⁵ *Ibid.* 255.

Bombay Marine was created a naval service for war purposes only. A Marine Board was constituted, consisting of a civilian Superintendent, a Master Attendant, a Commodore, and two Captains, the latter four posts being held by the four senior officers of the service. The Board conducted all business relating to the Dockyard and the financial details of the service, while the chief executive power was vested in the Superintendent, subject to the control of Government. Under this scheme the post of Comptroller of Marine was abolished, and the Dockyard came under the direct supervision of the civilian Superintendent of Marine.

From 1830 to 1863 the Dockyard was administered by the Superintendent of Marine (styled later the Commander-in-Chief of the Indian Navy), aided by a Master Attendant, Boatmaster,¹ Secretary and Accountant, Marine Judge-Advocate and Draughtsman,² Marine Storekeeper,³ Marine Paymaster,⁴ a Master-builder, and an Assistant to the Superintendents. Of these, the Master Attendant dealt with the administration of the Port outside the Dockyard, was head of the Harbour and Pilotage Board (now merged in the Port Trust), and supervised the docking of vessels and the maintenance of moorings.⁶ In 1859 all his dockyard duties were transferred to a Dock-

¹ The Boatmaster's post was abolished soon after 1830.

² This official was largely concerned with finance. He later became Naval Assistant to the Military Auditor-General; as Draughtsman he performed the duties subsequently assigned to the Indian Naval Draughtsman.

³ This office is the only one which has existed with alterations, since 1670.

⁴ This office was held by a civilian and was subsequently divided into the two offices of Deputy Naval Paymaster and Accountant to the Dockyard, both filled by senior Purzers of the Indian Navy.

⁵ This office was later divided into two posts, namely, the Assistant Superintendent, Indian Navy, and Secretary to the Commander-in-Chief, Indian Navy. The office is now that of the Assistant Director, Royal Indian Marine.

⁶ The office of Master Attendant expanded greatly between 1830 and 1863. In 1859 there were three Assistant Master Attendants, a Senior Pilot and 14 Junior Pilots. He supervised the work of the Boatswain of the yard and the Master-sailmaker. In 1873 his office was located in the Dockyard in the quarters now occupied by the Cashier's office. The office was transferred in that year to the Port Trust building.

master's establishment,¹ and he was thenceforth responsible only for the commercial work of the port. Fourteen years later (1873) his title was altered to that of Port Officer. Meanwhile in 1867, when the Indian trooping-service was organized, the Dockmaster was appointed agent for transports, and later Assistant Resident Transport Officer. In 1878 the first naval constructor (Mr. Barnaby) was appointed from England; while the Superintendent of Marine became successively in 1882 and 1892 Director of Her Majesty's Indian Marine and Director, Royal Indian Marine. A post of Consulting Naval Officer to the Government of India was created in 1874 and abolished in 1880; and similarly the post of Assistant Secretary, Military (Marine) Department, created in 1880, was merged in that of Assistant Director in 1884.

At present (1910) the Director, Royal Indian Marine, is in charge of all branches of the Government Dockyard, and is also Resident Transport Officer and a Member of the Defence Committee. Besides the Assistant Director, the following officers are included in the Dockyard Staff:—The Staff Officer, Chief Constructor, Constructor and Assistant Constructor, Inspector of Machinery, Marine Storekeeper, and Engineer in charge of the factory; while the subordinate staff includes five foremen, an electrician, a mechanical draughtsman, a master-rigger, master-sail-maker, assistant surgeon, and others. The business of the Dockyard is conducted on the system obtaining in the Royal Dockyards in England, the upkeep of buildings, docks, basins and roads being in charge of the Military Works Department, and the auditing of the accounts being carried out by an Examiner, who belongs to the Military Accounts Department of the Government of India.

The following is a list of the wars, expeditions, etc., for which the Government Dockyard, Bombay, has fitted out vessels:—

1717-18	... Small expedition against Angria.
1744	... Outbreak of war with France.

¹ The Dockmaster's Establishment is now known as the Staff Officer's Department.

1755	...	Commodore James' attack upon Suvarn-drug.
1756	...	Admiral Watson and Colonel Clive's attack upon Viziadrug.
1768	...	Expedition against Hyder Ali's forts on the Malabar coast.
1772	...	Attack of Broach.
1774	..	Admiral Watson's expedition against Thana.
1795	...	Capture of Cape of Good Hope. (Three vessels fitted out).
1799	...	Attack upon French Settlement of Mahi. Expedition against Perim Island.
1801	...	Expedition to Egypt.
1809	...	Persian Gulf expedition (war-ships, cruisers and transports).
1810	...	Attack upon Mauritius (war-ships and transports).
1812	...	Attack upon Malwan.
1815	...	Expedition against Dwarka and Bet.
1819	...	Persian Gulf expedition (war-ships, cruisers and transports).
1821	...	Expedition against Beni-bu-Ali tribe.
1838	..	Attack upon Kharak, Persian Gulf. Afghan war (transports to Indus).
1839	...	Aden expedition.
1840	...	China war (transports).
1852	...	Second Burma war (war-ships).
1854	...	Crimean war (transports).
1856	...	Persian war (war-ships, cruisers, transports).
1858	...	Expedition against the Waghers of Bet and Dwarka (warships and transports).
1860	...	Second China war (transports).
1867	...	Abyssinian war (transports).
1878-81	...	Afghan war (transports for Karachi). Malta expedition (transports).
1882	...	Egyptian war (47 transports).
1885	...	Third Burma war (8 transports). Suakin expedition (32 transports).

1896	...	Second Suakin expedition (9 transports).
1900	...	South African war (41 transports). ¹
1900-02	...	Third China war (16 transports).
1902-04	...	Somaliland Field Force (21 transports).

Elphinstone High School.—This institution was founded in 1820 as a branch of the Bombay Education Society, from which it was separated in 1822 under the title of "The Bombay Native School Book and School Society." In 1827 the title was altered to that of "The Bombay Native Education Society", which was retained until the constitution of the Board of Education in 1840, when the Society's schools were incorporated with the Elphinstone College classes, and all former designations were merged in that of the Elphinstone Native Education Institution. The School Department was again separated from the parent institution in 1856 and became thenceforth a High School.

Up to 1856 the combined institutions occupied premises on Carnac road near the Small Causes Court; and the school retained these premises after the separation. In 1872 Sir Seymour Fitzgerald laid the foundation stone of a new building for the school, which is called the Sassoon building, in consideration of a contribution by Sir Albert Sassoon of 1½ lakhs towards the total cost of the building, which exceeded 5½ lakhs. The building was designed by Mr. Molecey and comprises 32 class-rooms. At the rear is a large play-ground, and there is also a covered play-ground for recreation during the monsoon.

Pupils are taught the official high-school standards; and the school is divided into a Marathi and Gujarathi side, each of which contains about 300 pupils. The fee-rate is Rs. 3 for the two lower standards and Rs. 4 for the two higher. Sanskrit, Persian, French and Drawing are taught, and there is also a Science laboratory. Much attention is paid to physical education. The staff of the

¹ This expedition was despatched in record time. Orders were received at the Dockyard on the 6th September. The first transport left Bombay on the 17th September; and after that they were despatched at the rate of two a day. The troops numbered 5000, together with followers, ammunition, guns and three months' supplies.

school comprises a Principal, 39 masters, including the drill-master, and a cricket-coach. The income of the school is derived from Government contributions, the Elphinstone Trust Fund and fees. The expenditure amounts to rather more than half a lakh per annum. A secondary teachers' training College, established in 1906, is also located in the school-building.

Fire Temples.—Fire is the chief object of Parsi veneration and the Fire Temple is the public place of worship.¹ The Atesh Behram (the fire of Behram), 'the angel of success,' which is composed of sixteen kinds of fire, is worshipped in four temples in Bombay, and the Atesh Dadghan or Proper-place Fire is kept in a Fire Temple known as the Agiari or Place of Fire, and is also called Dare-meher, *i.e.*, the Gate of Mercy.² Bombay possesses 35 such places. A list of Atesh Behrams in Bombay is given below :—

Name.	Locality.	Date of opening	Remarks.
Dady Sett's Atesh Behram.	Girgaum	1783	Founded by Dady Nasarwanji.
Banaji's ,,	Charni road	1845	Founded by Framji Cursetji and Rustomji Cowasji and Dabholbhoy Rustomji Banaji.
Wadia's ,,	Princess Street	1830	Founded by the sons of Hormusji Bomanji Wadia.
Anjuman's ,,	Chandanwadi	1897	Founded by subscription.

The first two Atesh Behrams were consecrated according to Kadami rites and the last two according to Shensai.³ The first Agiari founded was the Fort Agiari, built by Banaji Limji in 1709 and rebuilt by his family in 1845. The second was built in the same locality by

¹ Some of the rich Parsis keep the sacred fire in their own houses, taking special care to see that it never dies out.

² For detailed account of the Sacred Fires and Temples, see *Bombay Gazetteer*, Vol. IX, Part II.

³ For these divisions see footnote 2 on page 193 of the *Bombay Gazetteer*, Vol. IX, Part II.

Maneckji Nowroji Sett in 1733 and rebuilt in 1891.¹ Each temple has a priest whose duty it is to read the religious books and to keep the fire burning. The priests wear white dress, including the turban. Since 1862 classes have been opened and special training is given to those who wish to be priests and Dasturs. A description of one Atesh Behram and one Agiari is given below :—

Anjuman's
Atesh
Behram.

In May 1896 the foundation stone of the Anjuman's Atesh Behram at Chandanwadi was laid by Dastur Dr. Jamaspjee Minoccherjee Jamaspasna, M.A., Ph.D., High Priest of the Parsis, with great pomp and ceremony. The building which was constructed from subscriptions collected from the Parsi community was completed in 1897, and was opened for use after the performance of a Jasan or thanksgiving ceremony. The building which cost about Rs. 2,30,000 has an imposing façade, the front walls, which are wrought in Porbandar stone bearing rich carving and medallions representing some of the well-known symbols of the Zoroastrian religion. The structure is built in the Persipolitan style, and the frontage particularly is an imitation of the palace of King Jamshed. The latest sanitary improvements have been introduced in all parts of the building which is well lighted and ventilated. The porch is a magnificent work of art, and so is the *sanctum sanctorum* where the sacred fire has been installed.

The shrine is about 25 feet long and an equal number of feet in width and in the centre of it is placed a marble pedestal, upon which stands the huge silver ewer containing the sacred fire. No one, except the officiating priests, is allowed to enter the room which is partitioned off by brass railings and there, besides the bells which ring in and ring out the five *gehs* or portions of the day, are to be found swords and other weapons used by the ancient Persians to prevent intruders from defiling the fire. Next to the *sanctum sanctorum* is

¹ Probably these may be the two Fire Temples noticed by Mrs. Postans in the Fort. In speaking of them she says : " They are described as consisting of a spacious hall having a central arch of masonry surmounting the vase of sacred fire."

the prayer hall which is 55 feet long and 55 feet wide, the height between the floor and the ceiling being nearly 21 feet. The prayer hall is carpeted with Brussels carpets of rich workmanship, the ceilings being covered with silk and satin bordered with tassels of silk. The entrance hall is paved with Minton tiles and on the walls on three sides of it are marble tablets bearing the names of the different donors who have given large sums for the construction of certain portions of the building. On the first floor, which is approached by a grand staircase, is a magnificent hall, 65 feet long and 56 feet wide, the roof, which is about 20 feet high, being supported on four fluted columns with coronas bearing horses' heads in Porbandar stone. The hall, which is used on festive occasions, contains portraits of the principal donors. The hall is named after Mr. Dadabhoy Nasarwanji Contractor, who paid about Rs. 20,000 for its construction. There are two large ante-rooms on each side of the hall, one of which is intended to be used as a library, and contains some ancient Persian literature.

The fire in Maneckji Sett's Agiari was installed in the year 1733 by Maneckji Nowroji Sett. The old building showed signs of decay, which led to the erection of handsome new building at a cost of about one lakh of rupees by Mr. Jalbhoy Ardesar, the eighth lineal descendant of the founder. It is built in the ancient Persian style of architecture, and its facade alone presents an appearance which is as unique as it is rare in the Western capital of India.

Maneckji
Shett's
Agiari.

The Adaran fire was installed in this temple on 5th November 1891. It is placed in a large silver censer, estimated to have cost about Rs. 7,000. The hall in which it is placed cannot be entered by any except the officiating priest or his immediate assistant. It is built entirely of marble facing, and compares favourably with any building of its class in elegance and simplicity. The chief problem in the erection of a fire-temple is how to get rid of the smoke. In the present instance a number of ventilating appliances have been provided.

During the time the building was under erection the Adaran fire was removed to Maneckji Sett's oart in the

Fort, a portion of the place having been set apart for the exclusive purpose and for the use of the priests in charge. All the arrangements for the removal and reinstatement were made under the directions of Nobed D. M. Adrian-wala, the hereditary priest officiating in the temple. A portion of the building is devoted to the dedication of the Dadgan fire and to the performance of certain rituals enjoined by Parsi custom and usage.¹

General Post Office.—The new General Post Office² stands close to Victoria Terminus, fronting Fort street, and is arranged with the object of affording the staff every facility for dealing quickly with the enormous volume of postal traffic. The chief feature of the building is the central hall which rises throughout the height of the building to the great dome, surmounting the structure. The style of the building is Indo-Saracenic, and the materials used are local basalt with dressings of yellow stone from Kurla and white stone from Dhrangadra. It was designed by Mr. John Begg, lately Consulting Architect to Government. The ground floor accommodates the inland and foreign parcel departments, registration and mail departments; the first floor contains the savings bank, correspondence and accounts departments; while on the second floor are the offices of the Postmaster-General, the dead letter office, and the residential quarters of the Presidency Postmaster.

Golf Club (Royal Bombay).—The Royal Bombay Golf Club was founded on the 9th January 1842, at a meeting held under the direction of Mr. H. H. Glass of the Civil Service. In August of that year the Secretary, Dr. G. Buist, received a letter from the Secretary of the Blackheath Golf Club, which after congratulating Bombay golfers upon the establishment of a club, informed the committee that the Captain of the Bombay Club should consider himself *ex-officio* an honorary member of the Blackheath Golf Club. The letter also expressed a hope that Bombay would in time be in a position to send a

¹ For further details of the Anjuman's Atesh Behrami and this Agiari, see "Times of India" of October 15th, 1897 and of November 6th, 1891.

² The present (1909) General Post Office stands opposite the Public Works Secretariat on the Esplanade.

deputation to compete upon the Blackheath links, to which Dr. Buist replied in humorous terms, pointing out *inter alia* that the first printed notice of the game as played in Bombay had been despatched to England by the same packet which carried General Pollock's account of the forcing of the Khyber Pass and Sir Robert Sale's victory at Jellalabad. In 1843 Dr. Buist sent a second letter to the Blackheath Golf Club, informing the members that a medal, which the Bombay Club had decided to present to their Blackheath brethren, had been despatched by steamer in July and appeared to have been lost in the wreck of the *Memnon*, and that therefore he was despatching a duplicate medal for presentation to the Club. This medal, for which an annual competition is held, is still in the possession of the Blackheath Club.¹

For about five years the Bombay Golf Club flourished, but disappeared about 1848, and was not resuscitated until 1855. The revival was however only temporary, owing to the departure from India of the "keener players," and in 1861 the club, bereft of most of its members, died a natural death. For the following nine years no club existed; but on the 16th November 1869, Messrs. Robert Stevenson (of the Hongkong and Shanghai Bank) and Edward Morris (of the Agra Bank), in concert with others, reconstituted the club under the title of the Royal Bombay Golf Club. In 1875 the Club was amalgamated with the Bombay Gymkhana, and has flourished steadily ever since, the only check to its prosperity having occurred in 1886-87, when the eastern and northern portion of the course was taken up for buildings. This disability, however, was subsequently obviated by the extension of the course to the western portion of the *maidan*. The following trophies are annually competed for by the members of the Club:—The "Forty-two" silver medal, struck in commemoration of the foundation of the club; the Blackheath Gold medal, presented in 1856 by the Royal Blackheath Golf Club; the Wimbledon cup, presented by the London Scottish Golf Club in 1878; the Calcutta medal, presented by the Calcutta Golf Club in 1881; the Madras medal, presented by the Madras

¹ Chronicles of Blackheath Golfers by W. E. Hughes.

Golf Club in 1882 ; the Golfer's cup, subscribed for by members in 1891 ; the Macdonald cup, presented by Dr. Macdonald in 1897 ; and the St. Andrew's gold and silver medals and the St. George's gold and silver medals presented annually by the Bombay Gymkhana.

Government Central Press.—The Government Central Press is situated next door to the Custom House in a building originally used as a hydraulic cotton press, and was organized in 1872 by Mr. Kingsmill, the former Superintendent of the Education Society's Press at Byculla. Departmental printing-presses had been introduced into the Secretariat in 1860, and these were amalgamated twelve years later into the Central Press, which was at that date housed in the Town Barracks (now the Supply and Transport Offices) in Bazaar Gate street. On Government vacating the Old Secretariat and in response to a demand of the Military authorities for the restoration of the Town Barracks, the Central Press was removed to the Old Secretariat, now known as Sardar's Buildings. Here it remained until the sale of the building in 1888, when Government decided to erect a special building for it near the new Secretariat. This building, now the Elphinstone College, was however not allotted to the Press, which eventually found accommodation in its present quarters in Custom House road. The question of moving the press to Yeraoda near Poona is now under consideration.

Established for the printing of Government orders and documents only, the Press issues all Government reports, notifications, the weekly *Government Gazette*, the Bombay series of Indian Law Reports, and special forms, financial and otherwise. Large quantities of standard Government forms used to be printed at the Central Press, but are now produced at the Yeraoda Jail Press in Poona. The Press is in charge of a Superintendent aided by two trained Deputy Superintendents, employs about 670 hands, and is divided into the following departments :—machine and press, reading, composing, binding and folding, and clerical. A branch press, under the supervision of an Assistant Superintendent and employing 150 hands, is maintained in the Secretariat for the printing of urgent

Government notifications, resolutions and proceedings ; while a stereo and type foundry, instituted in 1889, supplies both presses with all type. In 1907 the Government Central Book Dépôt was abolished and the Superintendent, Central Press, now undertakes the stocking, sale and despatch of Government and other publications including the Sanskrit series which were ultimately transferred to the old medical stores building in 1908. Up to the year 1873, the compositors were paid a monthly wage, after which the piece-work system was introduced. This at the outset caused a strike among the employés but on the authorities importing fresh hands from Madras, they returned to duty, and have worked on the piece-work system ever since. In 1887, the existence of the Government Central Press was jeopardised by a proposal to give all work on contract to local private presses ; but after the receipt of a report by a special Committee, Government decided to retain the press. The same question was again considered in 1909 ; and after enquiry it was found to be more economical to retain the press. The employés of the Central Press include Hindus, Muhammadans, Parsis, Bene-Israel and Native Christians, of whom the Parsis are the most efficient compositors, and the Hindus are the most capable employés in the foundry. Members of these two communities share the work of proof-reading and examination with the Native Christians in equal proportion. Among the Hindus, the Maratha predominates, the balance being composed of Brahmans, Bhandaris, Vanis, Sonars, Kasars, Telis, Shimpis, Kumbhars and Kolis. The average monthly earnings of a piece-work compositor are about Rs. 27 ; of those in the press and machine department from Rs. 10 to Rs. 20, while folders and binders earn from Rs. 5 to Rs. 34 ; and the employés in the foundry from Rs. 5 to Rs. 60 a month.

The following statement shows the financial results of the working of the Government Central Press (in thousands of rupees) at various periods since 1873-74 :—

Year.	Income.	Expenditure	Year.	Income.	Expenditure.
1873-74 ...	Rs. 2,60	Rs. 1,79	1903-04 ...	Rs. 4,48	Rs. 3,48
1883-84 ...	" 3·56	" 2,27	1905-06 ...	" 5,20	" 3,41
1893-94 ...	" 3,95	" 2,83	1908-09 ...	" 4,39	" 3,42

Bombay
Castle.

Government Houses.—The earliest Government residence was Bombay Castle,¹ which was named by the Portuguese "the Great House." In 1626 it was described as warehouse, priory and fort, and contained a square house which served the Portuguese as a place of retreat till relieved by troops from outside. The Dutch and English burned it in October of that year; but in 1634 it still served as the residence of the Lord of the Manor and was well protected at his own expense. It was this house which the Arabs partially destroyed in 1661, so that, according to Aungier, when the English took possession of it "there was little more than the walls left."² Shortly after the cession of Bombay, the house was put into repair, and by 1673 Dellaun, the French traveller, described it as "a fine fort in which the English President generally resides." Several writers, namely Hamilton, Grose, Ives and Valentia have described the Castle in detail; and it was in the Fort House that Grose had supper with William Wake, the Governor, in 1750. It is marked "Governor's House" in his map of Bombay³, and now faces the visitor as he enters the gate of the old Bombay Arsenal with a board upon it inscribed "Pattern Room."⁴ It lies behind the Town Hall and between the Mint and the Custom House.

¹ All Government Resolutions and orders are addressed even to this day from "Bombay Castle."

² "When the English took possession of this island, they found, in that part of it which chiefly commands the harbour, an old fortified house, the residence of the Portuguese Governor, and though this house might have served for other valuable uses, they were tempted to make of it the centre house of the Castle, which they built round it. It is, however, impossible to conceive in every sense a more inconvenient structure and the same or perhaps less cost than the reparations and additions have stood into the Company would have built a much better mansion now from the ground. For the false economy of preserving this old piece of building, which needs only to have been demolished or thrown away, had such effect that it hindered the English not only from consulting a more commanding position to the harbour, which is that of Mendham's Point but made them blind to the disadvantage of the Fort, built round it, being overlooked by an eminence near it called the Dungharee Point, on which there is only a small untenable little fort of no defence which serves now for the town prison for debtors or criminals."—Grose.

³ See plate facing p. 32 of Vol. I.

⁴ Douglas's Bombay and Western India, Vol. I. pp. 138, 139.

In 1757 the Bombay Government on the advice of Capt. New House.
 De Funck decided that most, if not all the upper part Old
 of the Fort House must be pulled down, and resolved Secretariat.
 to purchase Mr. John Spencer's house in Apollo street.
 This house was purchased in the same year by Govern-
 ment and transformed into Government House. It was
 known as "New House" until 1767, and after that as
 the "Company's House" or the "President's House."
 In this house Governor Jonathan Duncan died in 1811;
 and after that date the Governors gradually discarded it
 as a residence in favour of Parel, which became a hot-
 weather residence about 1750, and of Malabar Point. In
 1829 it ceased to be Government House and became
 the Secretariat, the Governor's residence having been
 removed to Parel. It continued to be occupied by the
 Secretariat till 1873, and was known for a long time after
 the removal of the Secretariat from it as the "Old
 Secretariat." It was sold by Government in 1886
 and on its site stand at present the buildings known
 as the "Sardar's Palace Buildings." It is of this Govern-
 ment House Bishop Heber in 1825 wrote:—"Though
 large and convenient, it is little used except for holding
 Councils, public darbars, and the despatch of business.
 It is a spacious dismal looking building, like many of
 the large houses in Bombay, looking like a Stadthouse in
 a Free German City." Valentia had described it a few
 years earlier (1802-06) as a handsome building with
 several good apartments, but inconvenient by reason of
 the largest apartment on both floors being a passage to
 other rooms.

At the date of Fryer's visit to Bombay, a church and con- Government
 vent belonging to the Jesuits stood on the site of Govern- House,
 ment House at Parel. The principal establishment of Pareli
 the Society was at Bandora, where they had also a college,
 which was defended like a fortress with seven cannons,

¹ According to a statement at p. 50 of the Monthly Miscellany for 1850, Parel is a shortened form of Non-Pareil the Peerless. This, whether intentional or otherwise, is nothing more than one of the meaning-making family of jokes. The joke may possibly have been suggested by Neibhur's French remark, 1763-64, Voyage II, 12, that in the whole of India there is nothing equal 'point de

besides small arms. When Bombay was ceded to the English, the Bandora college claimed much land and various rights in the island. On the claims being disallowed, the Jesuits threatened a resort to arms and went so far as to assist the Sidi in his successful invasion of the island in 1689-90. As a punishment, when the war was

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put to Patel's splendid dining and ball room. Compare Hobson-Jobson, § 42. In 1553 the name Patel, with Verella (Vadala), Varel (Vark) and Siva (Sion), occurs in Botecha's list of *Alfars* or hamlets under the town of Mahim. Compare Hobson-Jobson, § 3. There seems no reason to doubt that the name of the house is taken from the name of the village. The probable origin of the village name is the tree *Paral* or *Patal* (*Heterophragma Melocarpa* or *Bignonia Suaevolens*) the Tree Trumpet Flower.

In support of this derivation, Mr. A. Cumine, I.C.S., noticed that Patel is the centre of a group of tree names. East lies Vadala, the Banyan Grove, south Chinchpokli, the Tamarind Dell, west Mungat Marli, the Prickly-pear tract, and north Nadmala, the cocoas palm orchard, now known as the Mahim Woods. Beyond this group are Kambula hill, apparently the grove of Kankal or Kimal, also called Shiroti (Odina Wodiat); Byculla, Bhaya-khala, the *Curtia fistula* Level, *bhaya* being a local Kunbi form of *data*; Vinachadi, the six tree creek; babula tank near the Jamsetji Hospital and Habulwali on the east slope of Malabar Hill called after the *Habul* or *Learia Aratica*; Phanasvadi, the jack garden in Bhuleshwar; Bhendi Bazar, from its row of *Bhendis*, (*Hibiscus Esculneus*), north of Paidoni; Sattad, the seven brabs, and Vadachi Gadi, the banyan shop row in the Old Town; Chinch Bandar, the tamarind, landing below Nowroji Hill, and Ambagal (in front of the tamarind) the bullock drivers' name for Elphinstone Circle from the old tamarind at the north-east corner of the Cathedral.—Bombay Gazetteer Vol. XXVI, Pt. III, page 595.

Another equally plausible derivation of "Patel" is as follows:—The early history of our island is, as Dr. da Cunha remarks, closely interwoven with the history of its temples; and it is admitted by all that, some time after Mumdev's immigration, a Prabhu, named Mankoji founded a shrine in Patel village, and perpetuated his name in the title of the deity, who is known as "Mankeshwar" or Mankoji's god in these days. It is extremely unlikely that the Panchkalshis should have possessed no shrines, peculiar to their community. Moreover it is stated as a fact that they built three temples under the patronage of the Raja, two for their family deities Wageshwari and Chandika, and a third to Mahadev. Now the "lingam" of this Mahadev is said to be Swayambhu or non-artificial, and was therefore held to be of equal importance and sanctity with the celebrated "ling" of Vaijanath at Parali in the Deccan. Therefore the third temple which the Panchkalshis built was called the shrine of Parali Vaijanath Mahadev; and as the deity's title was Vaijnath Mahadev, the first portion of the title was given to the village in which his temple stood. The present temple of Mahadev, which is stated to rest on the exact site of the original temple, stands in the middle of the "Parali," "Paral," or "Patel" village.—"The Rise of Bombay," by S. M. Edwardes, p. 34.

over, all their property on the island, including the monastery and lands at Parel, was confiscated. In 1720 the building was alienated from its original use, and from that date Parel House was used as an occasional residence up to 1829, and thereafter until 1883 as the permanent residence of the Governors of Bombay.

Of Government House, Parel, Grose writes in 1750 : "At Parel the Governor has a very agreeable country house, which was originally a Romish chapel belonging to the Jesuits, but confiscated about 1719 for some foul practices against the English interest. It is now converted into a pleasant mansion house and what with the additional buildings and improvements of the gardens, affords a spacious and commodious habitation. There is an avenue to it of a hedge and trees near a mile long ; and though near the seaside, is sheltered from the air of it by a hill between. Here the Governor may spend most part of the heats, the air being cooler and fresher than in town ; and nothing is wanting that may make a country retirement agreeable."

Mr. W. Hornby (1776) was the first Governor who took up his residence in the Parel House. His name is inscribed on a small tablet on the walls. Records show that dances and balls used to be held at this house on the birthday of H. M. King George III and of the Queen Consort, annually on the 4th of June and the 18th of January respectively. About 1803, Sir James Mackintosh, then Recorder of Bombay, writes : "We live about 5 miles of excellent road over a flat from our capital. We inhabit by the Governor's kindness his official country house, a noble building with some magnificent apartments and with two delightful rooms for my library, in which I am now writing, overlooking a large garden of fine parkish ground." "In 1804 the Governor (Jonathan Duncan) gave a grand ball at Parel, when that sheet of water, to which succeeding generations of wearied dancers have repaired to recruit the exhausted energies, became a fairy scene of gorgeous fireworks, which blazed away far into the night and early morning over the faces of fair women and brave men."¹

The original building was enlarged and embellished by Mountstuart Elphinstone (1819-27). Heber in his

¹ "Glimpses of Old Bombay" by James Douglas, page 15.

"Narrative of a Journey through India," (1838) describes the appearance of Parel House as "very handsome, having a fine staircase and two noble rooms, one over the other, of 75 or 80 feet long, very handsomely furnished." "The lower of these" he continues "which is the dining room, is said to have been an old and desecrated church belonging to a Jesuit College, which had fallen into the hands of a Parsi, from whom it was purchased by Government about sixty years ago. Behind the house is a moderate-sized old fashioned garden in which is planted a slip of the willow, which grows on Bonaparte's grave. Adjoining is a small paddock or rather yard, full of different kinds of deer, who are fed like sheep by hand, and another little yard containing some wild animals." The latter included "a royal tiger, stretched at his ease in a cage", a tiger cat, a porcupine, an ostrich, and an orang-outang.¹ The house was repaired during the régime of Viscount Falkland (1850). Sir Seymour Fitzgerald and Sir Philip Wodehouse also had the house repaired and refurnished in good style. It was during the latter Governor's régime that H. R. H. the Prince of Wales (His Late Majesty King Edward VII) occupied a room in the building from the 8th to 15th November 1875. The chief receptions held in this house were those in honour of H. R. H. the Duke of Edinburgh in 1870, of the officers of the French frigate *L'Artemis* in 1838, of the king of Siam in 1872, and of the Archduke Ferdinand in 1893.

Sir Richard Temple refused to live at Parel, because the house was so much out of the way, and he transferred his head-quarters to Mahabar Point. Sir James Fergusson, who followed Sir Richard, occupied Government House, Parel, in November 1880. In his time all the rooms at Parel were called by the names of towns. Thus one room was known as Madras, another as Agra, the third as Lahore, etc., the names being painted over the doors in half-inch letters. The rooms in the Aide-de-Camps' bungalow were named Aden, Zanzibar, Kandahar, Quetta, Sibi and Khelat. In 1883 Lady Fergusson died of cholera in the house. This house, which was the permanent residence

¹ Mrs. Elwood's Narrative of an Overland Journey to India, 1830.

of the Governor from 1829, was abandoned after the term of office of Sir James Fergusson (1830—1835). After this, the house was offered to the Municipal Commissioner for the Victoria Jubilee Technical Institute. In 1897 the advent of plague suggested its use as a convenient hospital and within its walls hundreds of plague patients were treated in 1897-98. In August 1899 the Plague Research Laboratory was removed thither, the opening ceremony of the laboratory being performed by Lord Sandhurst. The house continues up to now to be occupied by the laboratory, which has since been styled "The Bombay Bacteriological Laboratory." The garden in the compound of the house is very spacious and well looked after. The house and ground have been vested in the City of Bombay Improvement Trust under section 60 (1) of Act IV of 1898, at a valuation of Rs. 9,91,407 and are dealt with by that body under the provisions of the Act.

This very agreeable resort, known as Marine Villa in ^{Govern} old records, is pleasantly situated on the summit of ^{ment House,} Malabar Point, a bold promontory which runs out into ^{Malabar} Point, the ocean on the western side of the island. It commands a splendid view of the greater part of the island. On this part of the hill there stood about 1774 a lofty tower, in which Raghunathrao passed the period of his exile from Poona and whence he sallied forth occasionally to pass through the holy cleft (Shri Gundji) at Malabar Point. The ruins of this tower have been noticed by Maria Graham in her Journal of a Residence in India 1813. In Price's memorials (1839) it is stated that Malabar Point was the occasional retreat of the Governor, General Medows. Sir Evan Nepean, who was Governor of Bombay from 1812 to 1819, had a small room at Malabar Point, and his successor the Hon'ble Mountstuart Elphinstone (1819—1827) erected a bungalow, which Heber describes as "a very pretty cottage in a beautiful situation on a rocky and woody promontory and actually washed by the sea spray." Lady Falkland, wife of Viscount Falkland (Governor, 1848 to 1853), was very fond of Malabar Point, and it is said that she spent one or two hot seasons here. Malabar Point, which was in use for many years more or less as a hot weather or occasional

residence, became the permanent residence of the Governors of Bombay after the abandonment of Patel House at the end of Sir James Fergusson's term of office (1880-1881), and it being the only residence in Bombay available for the Governor much money has been spent from time to time in making it suitable for the purpose. A dining-hall, billiard room, porch and verandah were constructed in 1869; considerable alterations were made in 1877, and many improvements and additions have been made since that date. H. R. H. the Prince of Wales (now H. M. King George the Fifth) stayed here in 1903. At present Government House consists of a number of good bungalows, besides the residence of the Governor, which are used for various purposes including the accommodation of the officers on the staff of the Governor and of the offices of the Private and Military Secretaries. Quarters are also provided in the grounds for servants, bandsmen, clerks of the Private and Military Secretaries, and others. The entrance lodge was built by Sir Seymour Fitzgerald. After ascending Walkeshwar road one notices half way up, a winding lower road leading to Government House, which together with the upper road is lined with well-tended trees, shrubs and creepers. The lower road was first constructed by Lord Elphinstone (1853-1860) and was widened in 1869, in which year were also constructed the lodges at the entrance of the road. The drive along this road affords charming glimpses of Bombay. The House has a band-stand, which is situated on the east side of the dining hall. It also boasts of an extensive garden, which is under the superintendence of an expert European gardener specially appointed to supervise the Government House gardens both in Bombay and Poona. A flagstaff 100 ft. in height stands at Government House, and a flag is kept floating on it all the time that the Governor is in residence. It may be noted that a small fort has been built here in connection with the harbour defences and is guarded with heavy artillery.¹ Government House is almost uninhabitable during the monsoon as Malabar

¹ The old Malabar Hill battery was recently relinquished by the Military Department, and the site has been made into a lawn.

Point is exposed to the full fury of the wind and waves ; but during the rest of the year it is a far more agreeable residence than Parel. Electric lights and fans were installed throughout the house in 1908-09.

Government Veterinary College :—The history of the Government Veterinary College at Parel is closely interwoven with that of the Bai Sakarbai Dinshaw Petit Hospital. When the question of establishing the latter was mooted, the Bombay Government asked the trustees to attach a Veterinary College to the hospital and offered to treat gratuitously all animals lodged in the hospital. The Society for the Prevention of Cruelty to Animals agreed to the proposal on certain conditions (see article on the Bai Sakarbai Dinshaw Petit Hospital for Animals), and in 1886 the Veterinary College was established¹ on the Hospital premises. But in 1906 Government bought for one lakh of rupees the adjoining premises belonging to Mr. Framji B. Jeejeebhoy and there erected a suitable College at a cost of Rs. 94,490. A hostel for the accommodation of 78 students has also been built at a cost of Rs. 81,921 on the same premises. The College building contains a large museum, library and chemical laboratory and three lecture rooms. The College authorities have in their charge the Sir Dinshaw Manekji Petit pathobacteriological laboratory, pharmacy and shoeing shed.

The special objects of the College are the training of competent native practitioners for the subordinate Government Veterinary service, for service in Native States, and for special posts under municipalities and district local boards. The Principal is the administrative head of the institution, and is subject to the control of the Director of Public Instruction. The appointments of Principal and Assistant Principal are held by officers of the Civil Veterinary Department. The staff comprises three teachers, who are graduates of the College, and a shoeing-smith instructor who is a pensioned European farrier-sergeant. Students, who have passed the Matri-

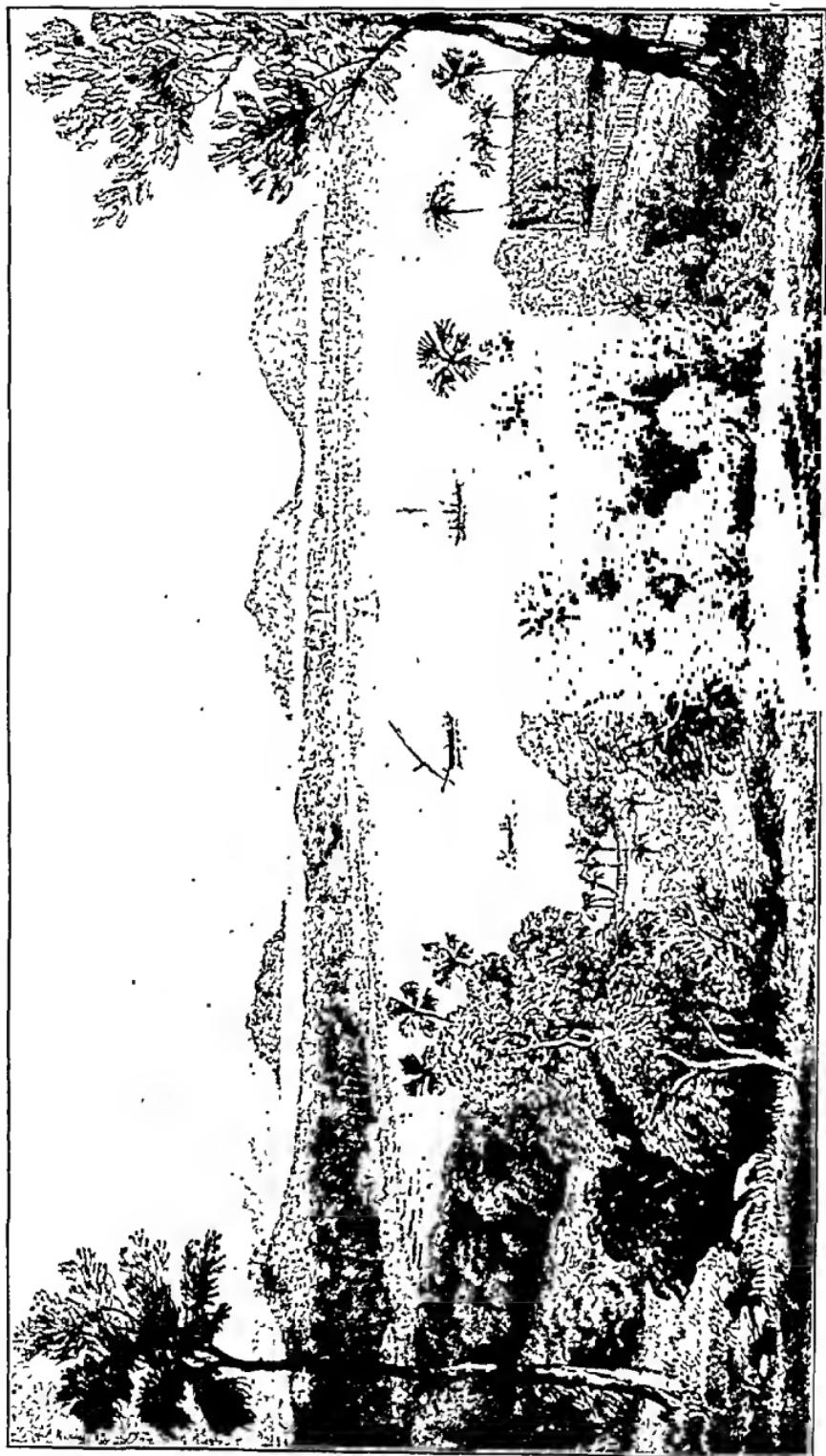
¹ In the first year 69 pupils entered the College, of whom 28 were Parsis, 27 were Hindus and the rest were Musalmans, Jews, Europeans and Eurasians.

culation or School Final examination, or who pass the College entrance test (which is equivalent to the 6th English standard), are admitted to the College, and after a full course of study, present themselves for an examination, which, if successfully passed, entitles them to the diploma of G. B. V. C. or "Graduate of the Bombay Veterinary College." The College fee is Rs. 60 per annum. Twenty-one Government scholarships valued at Rs. 15 each, tenable for three years, are awarded to the sons of landholders or others engaged in agricultural pursuits. The college is now (1909) attended by 106 students.

During the twenty-four years that the College has been in existence, 236 students obtained the diploma, and practically all of them have obtained employment under Government, local bodies, or Native States. Some have prospered as private practitioners in and outside India. The average annual expenditure of the College, including the salaries of the teaching staff, for the last ten years was nearly Rs. 47,520, and the average income from students' fees for the same period was Rs. 3,739. During the decade the Bombay Municipal Corporation contributed annually Rs. 2,500 towards the maintenance of the College.

Gymkhana.—Among the chief clubs for out-door recreation are the Bombay, Hindu, Parsi and Islam Gymkhana. The Bombay Gymkhana for European residents was instituted on the 19th June 1875, as the result of a meeting of members of various sporting clubs held in the office of Messrs. W. Nicol & Co. Prior to that date any one desirous of boating, pigeon-shooting or playing out-door games was obliged to become a member of several separate clubs, and it was not till 1872 that the amalgamation of these clubs into a single central Gymkhana was agreed upon and a site for a pavilion obtained from Government. As a result of the meeting of 1875, a pavilion was erected at an initial cost of Rs. 18,000 on the open ground adjoining the junction of Esplanade and Waudby roads, and the hockey and football club, the golf club, cricket club, gun club and boat club were all within a short period affiliated to the new Gymkhana.

BACK BAY FROM MALABAR HILL. 1850.



From *Life in Bombay*, 1852.

